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ABSTRACT

Thirteen research syntheses were analyzed to determine the academic, social, and psychological effects upon learners who are gifted and talented of three grouping practices: (1) ability grouping for enrichment; (2) mixed ability cooperative grouping for regular instruction; and (3) grouping for acceleration. It was concluded that the research showed strong, consistent support for the academic effects of most forms of ability grouping for enrichment and acceleration, but that the research is scant and weak concerning the socialization and psychological adjustment effects of these practices. Claims for the academic superiority of mixed ability grouping or for whole group instructional practices were not substantiated for gifted and talented learners. Other conclusions indicated that: academic outcomes of ability grouping vary substantially from effects reported for average and low ability learners; full time, pullout, and within-class grouping can all produce substantial academic gains; and there is little impact on self-esteem and a moderate gain in attitude toward subject in full time ability grouping. A series of guidelines for practices is included. Appendices chart the meta-evaluation of the research syntheses and the research-supported conclusions concerning grouping issues. (45 references) (DB)

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EC 301013

# The Relationship of Grouping Practices to the Education of the Gifted and Talented Learner

Karen B. Rogers, Ph.D.
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St. Paul, Minnesota

October 1991
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GROUPING PRACTICES

RESEARCH-BASED DECISION MAKING SERIES

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# The Relationship of Grouping Practices to the Education of the Gifted and Talented Learner: Research-Based Decision Making

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## ABSTRACT

In this paper 13 research syntheses were described, analyzed, and evaluated to determine the academic, social, and psychological effects of a variety of grouping practices upon learners who are gifted and talented. Three general forms of grouping practices were synthesized: (1) ability grouping for enrichment; (2) mixed-ability cooperative grouping for regular instruction; and (3) grouping for acceleration. Across the five meta-analyses, two best-evidence syntheses, and one ethnographic/survey research synthesis on ability grouping, it was found that: (a) there are varying academic outcomes for the several forms of ability grouping that have been studied (i.e., tracking, regrouping for specific instruction, cross-grade grouping, enrichment pull-out, within-class grouping, and cluster grouping); (b) the academic outcomes of these forms of ability grouping vary substantially from the effects reported for average and low ability learners; (c) full-time ability grouping (tracking) produces substantial academic gains; (d) pullout enrichment grouping options produce substantial academic gains in general achievement, critical thinking, and creativity; (e) within-class grouping and regrouping for specific instruction options produce substantial academic gains provided the instruction is differentiated; (f) cross-grade grouping produces substantial academic gains; (g) cluster grouping produces substantial academic effects; and (h) there is little impact on self-esteem and a moderate gain in attitude toward subject in full-time ability grouping options.

For the two meta-analyses and one best-evidence synthesis on mixed-ability cooperative learning there was no research reported below the college level to support academic advantages of either mixed-ability or like-ability forms. Although no research had been directed specifically to these outcomes for gifted and talented students, there was some evidence to suggest sizeable affective outcomes. Across one meta-analysis and one best-evidence synthesis on acceleration-based grouping options, several forms of acceleration produced substantial academic effects: Nongraded Classrooms, Curriculum Compression (Compacting), Grade Telescoping, Subject Acceleration, and Early Admission to College. Moderate academic gains were found for Advanced Placement. Either small or trivial effects were found for these six options for socialization and psychological adjustment.

It was concluded that the research showed strong, consistent support for the academic effects of most forms of ability grouping for enrichment and acceleration, but the research is scant and weak concerning the socialization and psychological adjustment effects of these practices. Claims for the academic superiority of mixed-ability grouping or for whole group instructional practices were not substantiated for gifted and talented learners. A series of guidelines for practice, based upon the research synthesized was included.

# The Relationship of Grouping Practices to the Education of the Gifted and Talented Learner: Research-Based Decision Making

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## EXECUTIVE SUMMARY

The recent debate on ability grouping has raised a number of educational issues for teachers and school administrators. In efforts to restructure or transform schools, thereby improving the general level of achievement for all students, many reformers have argued for the elimination of most forms of grouping by ability. They have also suggested that grouping be replaced by mixed-ability classrooms in which whole group instruction and cooperative learning are the major instructional delivery systems. In many cases this restructuring has included the elimination of accelerated classes and enrichment programs for the gifted and talented in the name of reform. "The Research" has been cited by these reformers as the rationale for such classroom changes (George, 1988; Slavin, 1987; Oakes, 1985). Unfortunately, the research does not appear to have been searched comprehensively, but the oversight is also understandable. With a literature base of over 700 studies on ability grouping (Kulik & Kulik, 1982) and over 300 studies on cooperative learning (Johnson, Johnson & Maruyama, 1983; Slavin, 1984), it is highly unlikely that any researcher has had the resources or time to make an effective analysis of these literature bases. In fact, there have been 13 syntheses of research in the past nine years, all of which represent analyses of parts of these bases. By analyzing 13 syntheses together, however, one can acquire a sounder understanding of what the research really has to say about grouping by ability in general and about grouping students who are gifted and talented for the purposes of enrichment and acceleration, in specific.

Two synthesis techniques have been developed in recent years to accommodate the huge research data bases we have accumulated over time: meta-analysis and best-evidence synthesis. In both techniques, the synthesizer must conduct an exhaustive search of the literature to locate all research, and then attempt to average across all the studies located to calculate a general effect for the instructional practice being synthesized. The metric of Effect Size, a procedure introduced by Gene Glass in 1976, has been used in these syntheses techniques (except the Gamoran & Berends synthesis, 1987) to communicate the comparative size of academic and nonacademic outcomes when all research on an instructional practice is combined. Effect Sizes of +.30 or higher are accepted as indicative of substantial gain of the experimental practice over its control (e.g., ability grouping vs. traditional classroom instruction without grouping). Such an Effect Size would indicate an approximate three months' additional gain on a grade-equivalent score continuum of a treatment group's achievement over the control group. Table 1 displays a summary of the Effect Sizes reported across the 13 syntheses for the variety of grouping practices currently used with students who are gifted and talented.

## Ability Grouping for Enrichment

Across the five meta-analyses (Kulik & Kulik, 1982, 1984, 1990; Kulik, 1985; Vaughan, 1990), the two best-evidence syntheses (Slavin, 1987, 1990), and one ethnographic/survey research synthesis (Gamoran & Berends, 1987), the following conclusions can be drawn:

1. While full-time ability grouping (tracking) for regular instruction makes no discernible difference in the academic achievement of average and low ability students (Slavin, 1987, 1990; Kulik & Kulik, 1982, 1984, 1985, 1990), it does produce substantial academic gains for gifted students enrolled full-time in special programs for the gifted and talented (Kulik & Kulik, 1982, 1984, 1985, 1990; Vaughan, 1990).

2. High ability student groups have more extensive plans to attend college and are more likely to enroll in college, but the research has not been able to substantiate that this is directly influenced by grouping (Gamoran & Berends, 1987). Likewise, research has not been able to substantiate that there are marked differences in the quality of teachers who work with high ability students or in the instructional strategies and learning time apportioned in such classes. It is probable that the substantial gains in achievement reported for gifted and talented students in 6 of the 8 research syntheses is produced by the interaction of greater degrees of learning potential, teachers who are interested in their students and in their subject, and the willingness of gifted students to learn while in a classroom with other interested, high ability learners.

3. Ability grouping for enrichment, especially when enrichment is part of a within class ability grouping practice or as a pullout program, produces substantial academic gains in general achievement, critical thinking, and creativity for the gifted and talented learner (Vaughan, 1990).

4. Ability grouping, whether for regular instruction or enrichment purposes, has little impact on gifted students' self-esteem. When full-time grouping is initiated, there is a slight decrease in esteem, but in special programs for gifted students, there are no changes in self-esteem (Kulik & Kulik, 1984, 1990). Enrichment pullout programs show only a small but positive increase in self-esteem (Vaughan, 1990).

5. Ability grouping for the gifted produces a moderate improvement in attitude toward the subjects in which students are grouped. A moderate improvement in attitude toward subject has been found for all ability levels when homogeneously grouped on a full-time basis (Kulik & Kulik, 1982, 1990).

6. Ability grouping is not synonymous with "tracking" (Slavin, 1987, 1990). It may take many forms beneficial to gifted learners, including full-time enrollment in special programs or classrooms for the gifted, regrouping for special subject instruction, cross-grade grouping for specific subjects or for the entire school curriculum, pullout groups for enrichment, and within class ability grouping, as well as cluster grouping (Kulik & Kulik, 1990). The major benefit of each grouping strategy for students who are gifted and talented is its provision of the format for enriching or accelerating the curriculum they are offered (Kulik & Kulik, 1990). It is unlikely that grouping itself causes academic gains; rather, what goes on in the group does.

## Cooperative Learning for Regular Instruction

Across the **two** major meta-analyses (Johnson, Maruyama, Johnson, Nelson & Skon, 1981; Johnson, Johnson & Maruyama, 1983) and **one** best-evidence synthesis (Slavin, 1990) on the academic and nonacademic effects of mixed-ability cooperative grouping, the following conclusions may be drawn:

1. Cooperative learning in mixed-ability groups for regular instruction cannot be shown to be academically beneficial for gifted and talented learners. Likewise, there is no research below the college level to support cooperative learning in like-ability groups for gifted students (Robinson, 1990).

2. Although there is some evidence to support sizable academic effects for those forms of cooperative learning that incorporate individual task accountability (Slavin, 1990), little research has been reported which would allow this to be extrapolated to the gifted population.

3. Although there is some evidence to support sizable affective outcomes for mixed ability cooperative learning, particularly for the acceptance of culturally diverse and academically handicapped students (Johnson, Johnson & Maruyama, 1983; Slavin, 1990), no research has been reported which would allow this to be extrapolated to the gifted population (Robinson, 1990).

## Grouping for Acceleration

Across the **one** meta-analysis (Kulik & Kulik, 1984) and **one** best-evidence synthesis (Rogers, 1991) on accelerative practices for gifted students, the following conclusions about grouping for acceleration can be drawn:

1. Grouping for the acceleration of curriculum for gifted students produces substantial academic gains for the forms of Nongraded Classrooms, Curriculum Compression (Compacting), Grade Telescoping (Rapid Progression at Junior or Senior High), Subject Acceleration, and Early Admission to College. Advanced Placement programs were found to produce moderate, nearly significant academic gains as well (Rogers, 1991).

2. Those forms of acceleration for which groups of gifted learners may be involved do not appear to have a direct impact on self-esteem, either positively or negatively (Kulik & Kulik, 1984; Rogers, 1991). It is apparent that a host of other environmental, personological, and academic variables are more directly involved with changes in self-esteem.

## Recommendations for Practices Involving Ability Grouping

Based on conclusions drawn from the research syntheses, the following guidelines are offered for educators who are considering various grouping options for gifted students.

**GUIDELINE ONE: Students who are academically or intellectually gifted and talented should spend the majority of their school day with others of similar abilities and interests.**

Discussion: What forms this option may take are open: Both general intellectual ability grouping programs (such as School Within a School, Gifted Magnet Schools, Full-time Gifted Programs, or Gifted Classrooms) and full-time grouping for special academic ability (such as Magnet Schools) have produced marked academic achievement gains as well as moderate increases in attitude toward the subjects in which these students are grouped.

**GUIDELINE TWO: The Cluster Grouping of a small number of students, either intellectually gifted or gifted in a similar academic domain, within an otherwise heterogeneously grouped classroom can be considered when schools cannot support a full-time gifted program (either demographically, economically, or philosophically).**

Discussion: The "Cluster Teacher" must, however, be sufficiently trained to work with gifted students, must be given adequate preparation time and must be willing to devote a proportionate amount of classroom time to the direct provision of learning experiences for the cluster group.

**GUIDELINE THREE: In the absence of full-time gifted program enrollment, gifted and talented students might be offered specific group instruction across grade levels, according to their individual knowledge acquisition in school subjects, either in conjunction with cluster grouping or in its stead.**

Discussion: This "cross grade grouping" option has been found effective for the gifted and talented in both single subject and full-time programming (i.e., Nongraded Classrooms).

**GUIDELINE FOUR: Students who are gifted and talented should be given experiences involving a variety of appropriate acceleration-based options, which may be offered to gifted students as a group or on an individual basis.**

Discussion: It is, of course, important to consider the social and psychological adjustment of each student for whom such options are being considered as well as cognitive capabilities in making the optimal match to the student's needs.

**GUIDELINE FIVE: Students who are gifted and talented should be given experiences which involve various forms of enrichment that extend the regular school curriculum, leading to the more complete development of concepts, principles, and generalizations.**

Discussion: This enrichment could be provided within the classroom through numerous curriculum delivery models currently used in the field, or in the form of enrichment pullout programs.

**GUIDELINE SIX: Mixed-ability Cooperative Learning should be used sparingly for students who are gifted and talented, perhaps only for social skills development programs.**

Discussion: Until evidence is accumulated that this form of Cooperative Learning provides academic outcomes similar or superior to the various forms of ability grouping, it is important to continue with the grouping practices that are supported by research.

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**Table 1**
**Effects Sizes Reported for**
**Research-Supported Gifted Program Options**

| Option | Academic Effect Size |
|---|---|
| Early Entrance to School | .36 |
| Subject Acceleration | .49 |
| Curriculum Compression (Compacting) | .45 |
| Grade Skipping | .78 |
| Enrichment (pullout) - curriculum extension | .65 |
| Enriched Classes Ability Grouped | .33 |
| Cross-grade Grouping (reading, math) | .45 |
| Nongraded Classes | .38 |
| Concurrent Enrollment | .36 |
| Regrouping for Specific Instruction (reading, math) | .34 |
| Advanced Placement | .29 |
| Credit by Examination | .75 |
| Cluster Grouping (specific differentiation) | .62 |
| Separate Classes for Gifted | .33 |
| Cooperative Learning | |
| Johnson's "Learning Together" | 0 |
| Slavin's TGT | .38 |
| Slavin's STL (combination) | .30 |
| Grade Telescoping | .56 |
| Mentorship | .42 |

Note: The Effect Sizes listed cannot be directly compared with others in the table. Some represent one-time academic gains, while others may be possibly cumulative gains, progressively increasing the longer the practice is used. The quality of the criterion measures used varies greatly from practice to practice also, thereby confounding any cross-comparisons to be made.

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# The Relationship of Grouping Practices to the Education of the Gifted and Talented Learner: Research-Based Decision Making

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In the past five years the practice of grouping students by ability has been questioned by educational researchers and school administrators. Several have argued that the use of ability grouping for reducing the demands upon teachers and improving the academic achievement of learners is not sufficient reason for maintaining the practice (for example, George, 1988; Slavin, 1987; Oakes, 1985). Other researchers have extolled the academic and social superiority of mixed-ability cooperative learning groups over other grouping practices (for example, Johnson & Johnson, 1990; Slavin, 1990). Amidst all the rhetoric lies one common theme: Each researcher and writer claims "the research supports" the conclusions drawn. With a literature base of over 700 studies on ability grouping (Kulik & Kulik, 1982), over 300 studies on cooperative learning (Johnson, Johnson, & Maruyama, 1983; Slavin, 1984), and over 300 studies on accelerative options involving forms of regrouping (Rogers, 1991), it is evident that no single researcher or writer is deliberately trying to mislead the general public or the educational decision maker. It is more likely that an effective analysis of the literature bases on grouping issues has not been undertaken, a mistake this paper will attempt to correct.

## SECTION ONE: APPROACHES TO RESEARCH

In effect, there are four general approaches to understanding and using research in educational practice: (1) the "charisma" approach; (2) the "I found this study" approach; (3) the "apples and oranges" approach; and, (4) the "best-evidence" approach. Educational decision-makers need to understand these approaches and their strengths and weaknesses in order to effectively "consume" or even make sense of the research on educational practice.

### The "Charisma" Approach

Charismatic and articulate educators (with strong feelings about certain practices) can make broad, simplistic claims that their recommendations are "research supported," with little challenge from non-researchers in the typical audience. The research cited by such educators is often tangential or focused on only a small part of the total research base. For example, references to the "research" against tracking by Oakes (1985), reflected one relatively small, poorly designed case study of 25 junior and senior high schools conducted by Oakes herself 8 years previously. The "research" against ability grouping for middle school students cited by George (1988), reflected, primarily, the research synthesis conducted by Slavin (1987) of one of four forms of ability grouping as it applied to elementary students. Johnson and Johnson (1990) claims supporting mixed-ability cooperative learning for gifted students were based on one small, poorly designed quasi-experimental study comparing the immediate and long-term retention effects of a five-day treatment on handicapped, regular, and "gifted" (no specification of how these students were identified) students (Johnson, Johnson, & Smith, 1982). References to the research

supporting acceleration for gifted students by Slavin (1988) have reflected primarily on the case studies of the Center for Talented Youth involving subject acceleration in mathematics, with no consideration of previous reviews of research or meta-analyses.

### The "I Found This Study" Approach

For what also might be called the "mailbox effect," this approach is frequently used by an educational decision maker or writer with a point of view based on personal experience or "gut" feelings, who locates a couple of research studies supporting this view, and disseminates them to superiors, colleagues, and school staff. Decisions are then made to change practice based on this limited and possibly biased research base. The problems with such an approach are obvious. There are few practices in education, let alone in gifted education, that are comprised of a research base of two. With 700 studies on ability grouping and 300 each on cooperative learning and acceleration, such an approach cannot rationally be accepted as appropriate representation of the "research." Even when research reviewers have attempted to keep "box scores" of all the studies on a practice which support or negate that practice and then have "voted" the box with the highest number of confirming or negating studies the winner, concerns have been raised about the validity of the conclusions drawn (Light & Smith, 1971; Jackson, 1980; Cook & Leviton, 1980; Hedges & Olkin, 1984; Slavin, 1984). As Mark Twain quipped in his *Autobiography*, "The thirteenth stroke of a clock is not only false of itself, but casts grave doubts on the credibility of the preceding twelve."

### The "Apples and Oranges" Approach

Educators coined the term, "apples and oranges" approach when the technique of meta-analysis was first introduced (Glass, 1976). This approach involves an attempt to collect all experimental and comparative research studies conducted on a strategy and to average across all the studies to calculate a mean "Effect Size." The Effect Size is first calculated for each study included, using the formula, $ES = \underline{M}e\text{-}\underline{M}c / \underline{s}$, where $\underline{M}$ represents the mean scores, respectively, of the experimental (e) and control (c) groups and summarizes the general direction and degree of outcome between the two groups. These individual Effect Sizes are then averaged to calculate the mean Effect Size across all the studies. In many cases, this averaging process is done regardless of the quality of individual research studies included, the sample sizes in the studies, the period in which the studies were conducted, or the specific form of the strategy. Such was the case for the first uses of meta-analysis in gifted education. Kulik and Kulik's (1982) synthesis of research on ability grouping with secondary students included studies of within-class and between-class grouping, added these studies across junior high and senior high students, and made no allowance for size of sample or differences in research design (for example, three track XYZ studies were combined with studies comparing students of like ability enrolled or not enrolled in special programs). The Kuliks' subsequent meta-analysis on acceleration for gifted students (1984) included studies of grade skipping and curriculum compression across students at all grade levels, and again made no allowance for size of sample or strength of research design.

Other examples of the "apples and oranges" approach as it applies to syntheses on grouping issues abound. For example, the discrepancies between the cooperative learning meta-analyses of Johnson, Maruyama, Johnson, Nelson, and Skon (1981) and Slavin (1990) are generally due to differences in the selection of which studies can be collectively averaged to produce the "Effect Size" metric. Because Slavin disallowed studies with a cooperative learning treatment of fewer than 20 class periods, nonrandomized or

unmatched assignments to treatment, use of criterion measures for which treatment but not control groups had access to the content, and studies in which nonacademic practices (e.g., golf swing) were compared, only nine of the Johnson et al. studies overlapped those in his best-evidence synthesis (Slavin, 1990). Despite the potential for misinterpreting the effects of such a synthesis of research, there can be a greater degree of validity in drawing conclusions about the effects of an instructional practice when care has been taken to use well-defined a priori criteria for inclusion in a meta-analysis.

Concerns have also been raised about the limitations of the measures used in those studies which can be quantitatively combined that assess achievement. Most often, standardized tests of achievement have been used, with no documentation that the tests actually measure what was taught in the experimental study or that the tests provided generous enough ceilings or were given at out-of-grade levels to differentiate for achievement at the extremes of ability. For instance, no difference in achievement might be the conclusion drawn about gifted students who were ability grouped if they and their equally gifted controls had both scored at the ceiling of the criterion measure used to assess differences in achievement. Likewise, there is some concern that achievement may be measured only in part by standardized tests. Grouping outcomes as measured by achievement gains on standardized tests is an extremely limited perspective when viewing the goals of and experiences provided in programs for the gifted and talented. Among the many meta-analyses described in this report, only Vaughan's (1990) meta-analysis of enrichment pullout programs appears to have taken these concerns into account.

The Effect Size metric translates easily into understandable classroom application. An Effect Size of +.30, generally accepted as indicative of moderate, but practically significant effects, would indicate any or all of the following interpretations:

1. The improvement (approximately three months' additional achievement) of the experimental group over the control group on a grade equivalent score scale (Glass, McGaw, & Smith, 1981).

2. The superior performance of approximately 30% of the experimental group over the control group on the criterion measure (Wolf, 1986).

3. The difference in standard deviation scores between groups of approximately one-third of the standard deviation unit higher for the experimental group (Glass, McGaw, & Smith, 1981).

4. The equivalent position of a school year's teaching efforts - experimental students were taught in three years what the control students would accomplish in four (Glass, McGaw, & Smith, 1981).

**The Best-Evidence Approach**

The best-evidence approach uses collection and calculation procedures similar to those for meta-analysis, but once all studies have been collected, the reviewer categorizes them by instructional variation and selects the strongest studies for each variation to synthesize, usually using the median rather than the mean Effect Size as the metric for reporting. A test of homogeneity of effects is used to establish what will be considered the

"best evidence" studies. Proposed by Slavin (1986), this approach combines the strengths of meta-analytic and more traditional narrative reviews. Research designs other than quasi-experimental and causal-comparative can be included and sample sizes can be statistically weighted. Slavin noted:

> The best-evidence synthesis...incorporates the quantification and systematic literature search methods of meta-analysis with the detailed emphasis of critical issues and study characteristics of the best traditional reviews in an attempt to provide a thorough and unbiased means of synthesizing research and providing clear and useful conclusions. (p. 10)

Criticisms of the best-evidence approach have primarily been leveled at: (a) the role of the synthesizer as both "judge and jury" of the research base (Guskey, 1987); (b) the effects various differences in inclusion criteria might have on synthesis conclusions (Abrami, Cohen, & d'Apollonia, 1988); (c) the dependence on "dated" studies (Hiebert, 1987); and (d) potential neglect of the conclusions to examine the conceptual adequacy of the studies included for synthesis (Gamoran, 1987). All but the first criticism have also been leveled at the meta-analytic approach to research (Abrami, Cohen, & d'Apollonia, 1988). It becomes apparent that a thoughtful reader of the best-evidence synthesis must remain vigilant to the possibility of these errors occurring, despite the potential this approach has for drawing generalizations about the specific effects of given educational practices.

This approach has been used by Slavin to synthesize research on ability grouping for elementary and secondary students (1987, 1990), although all studies comparing grouped gifted students with nongrouped gifted students were eliminated from the analysis. Slavin has also used this approach to synthesize research on the academic effects of cooperative learning (1990). The approach has also been used by Rogers (1991) to synthesize research on 12 accelerative options for gifted students, several of which involve the grouping by ability of gifted and talented learners.

In addressing the research on grouping (enrichment, acceleration, cooperative learning) there have been 13 major syntheses of research that use the meta-analysis or best-evidence approach. While acknowledging the potential pitfalls of these approaches to research, the remainder of this paper will draw conclusions about the issues relating to grouping gifted and talented students for instruction. In other words, this paper will attempt to conduct a meta-evaluative synthesis of the research syntheses on grouping. The 13 syntheses are:

Gamoran, A., & Berends, M. (1987). The effects of stratification in secondary schools: Synthesis of survey and ethnographic research. *Review of Educational Research, 57,* 415-435.

Johnson, D. W., Johnson, R. T., & Maruyama, G. (1983). Interdependence and interpersonal attraction among heterogeneous and homogeneous individuals: A theoretical formulation and a meta-analysis of the research. *Review of Research in Education, 53,* 415-424.

Johnson, D. W., Maruyama, G., Johnson, R., Nelson, D., & Skon, L. (1981). Effects of cooperative, competitive, or individualistic goal structures on achievement: A meta-analysis. *Psychological Bulletin, 89* (1), 47-62.

Kulik, C-L. C. (1985). *Effects of inter-class ability grouping on achievement and self-esteem.* Paper presented at the annual convention of the American Psychological Association, Los Angeles, CA.

Kulik, C-L C. & Kulik, J. A. (1984). *Effects of ability grouping on elementary school pupils: A meta-analysis.* Paper presented at the annual meeting of the American Psychological Association, Ontario, Canada.

Kulik, J. A., & Kulik, C-L. C. (1982). Effects of ability grouping on secondary school students: A meta-analysis of evaluation findings. *American Educational Research Journal, 19,* 415-428.

Kulik, J. A., & Kulik, C-L. C. (1984). Effects of accelerated instruction on students. *Review of Educational Research, 54,* 409-425.

Kulik, J. A., & Kulik, C-L. C. (1990). Ability grouping and gifted students. In N. Colangelo & G.A. Davis (Eds.), *Handbook of gifted education,* (pp. 178-196). Boston, MA: Allyn & Bacon.

Rogers, K. B. (1991). *A best-evidence synthesis of the research on accelerative options for gifted students.* Unpublished doctoral dissertation, University of Minnesota, Minneapolis.

Slavin, R. E. (1987). Ability grouping: A best-evidence synthesis. *Review of Educational Research, 57,* 293-336.

Slavin, R. E. (1990). Achievement effects of ability grouping in secondary schools: A best-evidence synthesis. *Review of Educational Research, 60,* 471-499.

Slavin, R. E. (1990). *Cooperative learning: Theory, research and practice.* Englewood Cliffs, NJ: Prentice-Hall.

Vaughan, V. (1990). *Meta-analysis of pull-out programs in gifted education.* Paper presented at the annual convention of the National Association for Gifted Children, Little Rock, AR.

In general, it can be stated that the integration of these 13 analyses should provide substantial evaluation of the positive academic, socialization, and psychological adjustment effects of grouping strategies upon gifted and talented students. Glass (1976) noted that "the integration of research studies...should be valued more highly than many forms of original research..." (p. 353). "This endeavor deserves higher priority now than adding a new experiment or survey to the pile..." (p. 4).

## SECTION TWO: PROBLEMS AND ISSUES RELATED TO GROUPING

Even a cursory review of educational publications reveals a growing concern, perhaps even a few false assumptions about grouping practices in general, as well as questions about the impact of grouping upon various levels of ability, descriptions of the benefits of mixed-ability cooperative grouping, and disquietude about the emotional and social effects of grouping for acceleration. Particular attention has been given to: (a) academic achievement and self-esteem; (b) teacher/student expectations; (c) racial/social discrimination and mobility; (d) instructional quality; and (e) social cohesion. In the subsections that follow, each of these variables will be more fully described in terms of the concerns or assumptions related to ability grouping, cooperative learning and acceleration. **It should be stressed that these concerns and assumptions may not,** however, **bear any relationship to actual research,** as Section Three will show. It must be noted that although the concerns will be listed in Section Two, they will not be directly addressed in terms of the research until the end of Section Three of the paper (Appendix B).

### Concerns/Assumptions Often Raised About Academic Achievement and Self-Esteem

There appear to be five major achievement and esteem concerns or assumptions about grouping for enrichment or acceleration and cooperative grouping.

1. **Ability grouping** for enrichment programs does not result in achievement benefits for gifted learners. If gifted learners benefit academically while grouped, it is due to factors other than grouping, such as individual motivation to achieve, differentiated curricular materials, and specially trained teachers. Ability grouping for regular instruction may, however, be directly responsible for decreased academic achievement, loss of academic ground, and loss of ambition to succeed in school among average and low-ability learners.

2. **Ability grouping** for enrichment programs tends to lead to inflated opinions of capability for the gifted. Ability grouping for regular instruction may lead to lowered self-esteem for average and low-ability learners.

3. **Cooperative learning** for regular instruction (mixed ability) provides greater academic benefits for students of all levels of ability than when students must work individualistically or in a competitive environment. The gifted, in particular, by being required to help others master materials and concepts, gain both cognitively and academically.

4. **Cooperative learning** for regular instruction (mixed ability) improves the academic self-concept of all learners, including the gifted.

5. **Acceleration** of the gifted student leads to problems with self-esteem and psychological maladjustment due to the comparative emotional immaturity of the accelerant.

## Concerns/Assumptions Often Raised About Teacher/Student Expectations

Eight concerns or assumptions surround teacher and student expectations for achievement and esteem when various grouping practices are employed.

1. Teacher expectations when gifted students are **grouped** for enrichment are realistic; that is, those students can benefit from the enrichment provided. Teachers also suspect that most learners in their classrooms could benefit from this enrichment.

2. Teacher expectations for students of different ability levels vary considerably when students are **grouped** by ability for regular instruction: Teachers of low-ability **tracks** tend to underestimate the ability of their students, thereby spending inordinate time on drill and practice and teaching-for-mastery instructional techniques.

3. Student expectations for achievement are dampened by placement in average or low-ability **tracks**. They tend to give up on trying to master challenging content.

4. Students' self-esteem suffers when they are placed in average or low-ability **tracks**. They perceive that a stigma has been attached to their group placement.

5. In **cooperative grouping** using mixed-ability groups, teachers expect that slower learners will learn from the high achievers with whom they have been placed; hence, there is the expectation that all children will learn the same quantity of material in the same period of time, and the climate for learning will become more "academic."

6. In **cooperative grouping** there is the expectation that when all members of a group "sink or swim" together, the self-esteem of all group members will improve as the group succeeds.

7. Teachers expect that children who have been **accelerated** will have some difficulty with higher grade level materials and will become "average" achieving students when compared with older-aged classmates.

8. Teachers expect that the self-esteem of an **accelerated** group of students will be damaged by the need to compete full-time with older-aged classmates.

## Concerns/Assumptions Often Raised About Racial and Social Discrimination, Mobility

There are six concerns or assumptions that focus on whether or not grouping for enrichment, acceleration or for cooperative learning incorporate discriminatory practices.

1. Students placed in high ability **groups** for which challenging and enriched curriculum is planned tend to be middle class or higher, white students; low-ability groups tend to contain proportionately higher numbers of lower social class and culturally diverse students than found in the general school population. Educational decision-makers may have racial and social class stereotypes that affect their placement and grouping decisions.

2. Once students are placed in an ability **track**, that placement is rarely changed upwards; students are more likely to move down a track than to progress up. The difference in ability becomes greater the longer students are grouped, with low ability students having no opportunity to catch up on the skills and knowledge base presented to the high-track students. Hence, racial and economic segregation/stratification becomes entrenched.

3. Students placed in a high ability **track** are perceived by teachers and other students as the "in group", while students placed in low ability "tracks" are considered the "outgroup." A social stigma is placed on slower learners, and the status of faster learners is enhanced in grouped situations.

4. Recognizing and **grouping** for individual differences in ability and providing differentiated instruction to match those differences is undemocratic: It allows some students to get ahead in life's "rat race."

5. Students who are **cooperatively grouped** for racial and ability balance acquire positive attitudes toward all group members.

6. Gifted students will be required as adults to deal with all segments of the population, particularly if they are in leadership roles; **cooperative grouping** with racial and ability balance helps prepare gifted students for such roles as well as to help them acquire appropriate attitudes toward others with "differences."

## Concerns/Assumptions Often Raised About Instructional Quality

Five concerns or assumptions have been raised about the influence of grouping practices upon instructional quality, that is, upon the quality of teaching and the scope of instructional practices in the classroom.

1. Teachers tend to interact differently with students they perceive as having more or less ability. Teachers in low ability **tracks** tend to spend a great deal of class time on discipline and behavior control. Teachers in high ability tracks provide more "opportunity to learn" time for students, due to better attendance rates and higher motivation to learn among these students.

2. Instruction in low **ability groups** tends to be delivered through drill and practice or teaching for mastery, and with the use of unimaginative and unchallenging worksheets or other learning materials. Instruction in high ability groups relies more on discovery learning, exposure to abstract ideas,

and discussion with a focus on problem solving and creative production as intended learning outcomes. The knowledge and skills taught vary by group, with the high ability groups receiving "high status" knowledge and the low ability groups receiving vocational knowledge only.

3. "Better" teachers are rewarded by being assigned the high **ability groups** and honors classes, while less experienced and less effective teachers are relegated to low ability groups and remedial classes. These "better" teachers are not only more instructionally effective, but show more enthusiasm for learning, model the value of learning, and genuinely like their students. Such is not the case with teachers assigned to low ability groups.

4. **Whole group** instructional delivery (i.e., all learners use the same materials for the same length of time as in group-paced mastery learning, direct instruction, companion reading, Chicago Mastery Learning programs, etc.) results in higher instructional quality for all learners.

5. Teachers can better meet the needs of all students by **grouping** them by achievement level. Grouping makes it easier on teachers. The real challenge is to meet those needs in mixed-ability classes.

**Concerns/Assumptions Often Raised About Social Cohesion**

Three concerns or assumptions have centered on the social cohesion of classrooms when ability grouping is the general practice.

1. Students in high **ability groups** tend to develop healthy social relationships with others in their group as a result of their common learning experiences and social cognition. Students in low ability groups tend to form social relationships with some of the peers in their group, but without appropriate social modeling, such relationships are detrimental. There is also more disharmony in low ability classes. Students in such classes don't work toward a common educational goal.

2. Social cohesion, perceptions of peer support, and social self-concept improve dramatically among all ability levels when learners are **cooperatively grouped.**

3. Students who have been **accelerated** will not be accepted into the social network of their new class; they will stand out as "different" and therefore, socially unacceptable.

## SECTION THREE: RESEARCH SYNTHESIS

### Ability Grouping Research

Eight research syntheses have focused on the various effects of ability grouping for regular or enriched/remedial instruction and have been conducted by James and Chen-Lin Kulik (1982, 1984, 1985, 1990), Robert Slavin (1987, 1990), Adam Gamoran and Mark Berends (1987), and Vicki Vaughan (1990).

### Research Syntheses by James Kulik and Chen-Lin Kulik

The Kuliks have provided the earliest and most recent syntheses of the research on ability grouping. Their initial studies (1982, 1984) focused on specific school levels, that is, secondary or elementary, but their last two syntheses have looked across K-12 populations in calculating the general effects of grouping for regular instruction and grouping for enrichment or remediation.

**Secondary Grouping Research.** In a meta-analysis (1982) of 52 comparative or quasi-experimental studies carried out in secondary schools, 36 of the studies reported high achievement gains for grouped classes, 8 of which were statistically significant. Of the studies analyzed by the Kuliks in this synthesis, 33 involved the study of ability grouping in junior high and 19 in senior high. The average Effect Size was +.10, implying that, in a typical class, the performance of ability grouped students was raised by one-tenth of a standard deviation unit or from the 50th to the 54th percentile of achievement. When material was specifically tailored to the grouped classes by specific subjects, the average Effect Size across these studies was +.15. Ability grouping for science and social studies resulted in the largest average Effect Sizes (+.18, +.11, respectively). Studies that focused on the effects of grouping upon an individual ability level indicated smaller Effect Sizes for achievement for slow and average learners (+.02, respectively), but in the 14 studies on grouping for high ability only, the average Effect Size was +.33.

In terms of gains in self-esteem, the average Effect Size was +.01, implying that the decision to group or not to group has little effect on students' self-esteem. For the eight studies looking at gains in positive attitudes toward subject matter, the Kuliks were able to conclude with statistical confidence that grouping had a positive effect on student attitudes toward the subject(s) in which they were grouped (ES=+.37). A mean Effect Size of +.09, albeit very small, on attitude toward school favored grouped classes across the 11 studies. Based on these findings, the Kuliks drew the following conclusions about ability grouping at the secondary level:

> ACHIEVEMENT: ... ability grouping had only trivial effects on the achievement of average and below average students. This finding... does not support the view of other researchers who claim that grouping has unfavorable effects on the achievement of low-aptitude students. The effect of grouping is near-zero on the achievement of average and below average students; it is not negative.
>
> ATTITUDES: ... the effects of grouping were clearer on students' attitudes than on student achievement. Students assigned to grouped classes for work in

> certain subject areas (e.g., mathematics or English composition) responded more favorably to these subjects than did similar students assigned to heterogeneous classes... Effects of grouping on attitudes toward school and on self-concept were also positive, but these effects were small and less consistent. (pp. 425-426)

**Elementary Grouping Research.** In 1984, the Kuliks produced a meta-analysis of the effects of ability grouping upon elementary school students. The results were similar. Of the 28 studies that looked at the achievement effects of organizing classrooms in graded schools to combine children who are similar in ability, 20 favored the grouped condition, 13 significantly. The average Effect Size for the 28 studies may be interpreted as a raise in grouped students' scores on achievement tests by +.19 standard deviation units. This implies that in the typical study, grouping accounted for approximately two months' additional performance on a grade equivalent scale of achievement. For those studies that measured the effects of grouping for gifted students, however, the average Effect Size was even higher (ES=+.49). For the nine studies that dealt with self-concept, the effect was trivial. The Kuliks did not synthesize the research on attitude toward school or subject matter in the 1984 study.

**K-12 Grouping Research.** In their third and fourth syntheses (1985, 1990) the Kuliks analyzed the research on inter-class ability grouping across elementary and secondary schools. Inter-class ability grouping was defined as the practice of assigning students to classes, tracks, or streams, according to ability. (In their first two meta-analyses, inter- and intra-class grouping studies were combined.) In the 1985 study, grouping research was collected on whole class grouping in secondary schools, such as an "honors" class in English, and in elementary classrooms when all students of one ability level were assigned to the same class.

In the 1985 meta-analysis, 85 studies were found that compared inter-class ability grouping with traditional classroom instruction, 40 at the elementary level and 45 at secondary. Of the 78 studies analyzed that dealt with comparative achievement gains, the average Effect Size for grouped classrooms was +.15, the equivalent of increasing achievement test scores by 1.5 months on a grade equivalent scale. Studies that looked specifically at an individual ability level found differing Effect Sizes according to ability. Low-ability groups (for which there were only four reported studies) had zero Effect Size, suggesting that low-ability levels are neither harmed nor helped by grouping arrangements. Studies on average learners indicated an average of +.04 Effect Size, in other words, a near-zero effect; studies on high-ability students placed in honors classes resulted in an Effect Size average of +.30. Assignment of high-ability students to classes without systematically enriched subject matter, however, resulted in an average Effect Size of +.12. The average Effect Size of grouping on the self-esteem of students was near zero, despite small but differing self-esteem Effect Sizes by ability level (ES (high ability) = -.14, ES (average ability) = -.16, ES (low ability) = +.16). Kulik concluded:

> ... [S]chool programs providing special treatment for talented students usually produce good results. The talented students who are in these programs almost invariably gain academically from them and they do not become smug or self-satisfied as a result of their participation. If anything, talented students may become slightly more modest about their abilities when they are taught in homogeneous groups...This meta-analysis provided little support for the common belief that

> grouping programs have negative effects on slower learners. On the contrary, we found that homogeneous grouping programs often helped to improve the self-esteem of slow learners, and these programs may have also had small positive effects on their achievement. (p. 4)

In the Kuliks' most recent meta-analysis of between-class grouping, as reported in *Handbook of Gifted Education* (1990), the Kuliks located 49 controlled "multitrack" or "XYZ" studies of students taught in homogeneous classes compared to students taught in mixed-ability classes. None of the studies in this meta-analysis involved separate programs or classes for gifted students, although it may be assumed that children assigned to the high ability track in these studies may have included a few gifted students. The mean Effect Size across these multitrack studies was +.06 standard deviation units, equivalent to a gain on a grade equivalent scale of one-half month. However, when the Kuliks analyzed the results of the 40 studies which reported separate effects by ability level, there were differential effects: +.12 for high-ability, +.04 for average ability, and zero for low-ability students.

The Kuliks synthesized the 15 studies among the 49 that dealt with self-esteem, finding that in only 6 of the 15 did grouping appear to produce more positive self-concepts. The average overall effect of grouping in the 15 studies was to decrease self-esteem scores by -.06 standard deviations, considered trivial. Again, when the separate self-esteem changes were reported in the 15 studies by ability level, only low-ability students produced more positive self-concepts when grouped, although the changes were not considered meaningful: Effect Sizes for high-ability students were -.14, for average ability students (-.16), and for low-ability students (+.16).

In the 1990 analysis, the Kuliks looked once again at changes in attitude toward subject matter and attitude toward school. All six studies on subject matter attitude showed positive effects, with a mean Effect Size of +.27. Across the four studies of attitude toward school, the mean Effect Size was +.04.

Thus far, each of the Kuliks' meta-analyses focused on the comparative ability level differences in academic achievement and self-esteem for between-class-only or between-class and within-class grouping when all students at a grade level (or levels) were grouped according to locally developed criteria for placement, termed multitrack or XYZ programs. These grouping arrangements were not established to provide differentiated instruction for gifted learners. The 49 studies reported evaluative results for which grouping made the delivery of instruction easier for teachers to manage with a narrowed continuum of ability. The Kuliks were also interested, however, in the effects of grouping programs designed especially to meet the needs of gifted and talented students. Such programs included separate classrooms for the gifted and gifted "clusters" within an otherwise traditional classroom.

Of 25 controlled studies of separate classes for gifted students, 19 reported higher achievement in the homogeneously grouped situation, 11 of which were statistically significant. The average Effect Size across the 25 studies was +.33. Another way to interpret this effect is that in the typical study of separate classrooms for the gifted, approximately 63% of the special class gifted students outperformed the typical gifted student in the mixed-ability class. In actuality, the range of Effect Sizes across the 25 studies was broad (-.27 to +1.25), great enough to lead the Kuliks to conclude that factors

other than grouping itself must have been responsible for the reported outcomes. Slavin (1987) among others, has argued that the differentiated expectations, outcomes, teacher quality, curriculum, and even student motivation are more likely responsible for the achievement levels experienced by students in these programs.

Self-esteem (global) was examined in 6 of the 25 studies, with 4 studies reporting more favorable self-concepts in the experimental condition. The average Effect Size across the 6 studies was +.02. Only three of the separate gifted classroom studies examined attitude toward subject matter or school. For subject matter, the one study reported a trivial effect, and for the two studies on attitude toward school, strong positive effects were reported.

Grouping the gifted as a "cluster" within a heterogeneous classroom provided the real surprise effect. Of the four studies located by the Kuliks, all reported positive effects for academic achievement, three of which were statistically significant. The mean Effect Size for these studies was +.62. From the results of these meta-analyses, the Kuliks concluded:

> The evidence is clear that high-aptitude and gifted students benefit academically from programs that provide separate instruction for them. Academic benefits are positive but small when the grouping is done as a part of a broader program for students of all abilities. Benefits are positive and moderate in size in programs that are specially designed for gifted students...Evidence is less clear about noncognitive outcomes of programs of separate instruction for high-aptitude and gifted students. Despite their importance, such outcomes are not studied frequently by educational researchers, and only tentative conclusions can be drawn. One of these conclusions is that ability-grouping programs have little or no consistent overall effect on student self-esteem ... (p. 191)

**Research Syntheses by Robert Slavin**

Robert Slavin's best-evidence syntheses of research on elementary grouping arrangements (1987) and secondary grouping (1990) essentially draw the same conclusions about tracking for all students as the Kuliks found in their separate analysis of mixed track, XYZ studies. The differences between his work and that of the Kuliks has been his exclusion of all studies of ability grouping for gifted or special education children. He reasoned that the literature has been fairly well-analyzed for these special ability groups and suggested that inherent in selection for a gifted or special education group is the understanding that there will be significant differences in curriculum, class size, resources available and goals, all of which are inseparable from the practice of grouping itself. In his ability grouping syntheses (1987, 1990), Slavin has added that the selection process for special education programs may also influence study outcomes, contending that students selected usually have stronger motivation to succeed, have fewer behavioral or emotional problems that might interfere with learning, and these factors, rather than the grouping arrangement, produce favorable achievement effects. Conversely, Slavin's syntheses have been taken to task by numerous researchers for four primary flaws: (1) differences in curriculum, class size, resources available and goals contribute to the outcomes in all classrooms, not just in gifted or special education classrooms--if grouping is not the "cause" of achievement gains for the latter classrooms, then how can it be the "culprit" in

regular or traditional classrooms?; (2) the studies included are primarily from the 1950s and 1960s and may not be generalizable to the classrooms of the 1990s; (3) the studies are based on standardized achievement tests, which may not measure what actually goes on in grouped situations and may not fully assess the academic gains of higher achieving students due to low test ceilings and possible regression to the mean for students who score at the extremes of these tests; and (4) he draws strong conclusions about the merits or lack of merit about certain forms of ability grouping based on very few studies, conclusions not found to be warranted in some cases by subsequent researchers (Kulik & Kulik, 1990).

Slavin's two best-evidence syntheses must be mentioned for two reasons: (1) they are frequently referred to by less research-oriented educational writers; and (2) Slavin looked more closely than his predecessors at the type of grouping arrangement in the studies located. Hence, despite their lack of applicability to educational practice for the gifted and talented, it is important for all educators to know of their content and conclusions. In addition to the more permanent ability grouping, previously called "tracking," Slavin identified three short-term ability grouped arrangements in the elementary and secondary grades: (1) regrouping for specific subject instruction, in which students remain in heterogeneous classes most of the day and are regrouped by achievement/performance level within grade levels for reading and/or math; (2) Joplin Plan, in which students are regrouped across grade lines for reading; and (3) within-class ability grouping, whereby the classroom teacher divides students temporarily into two or more groups by achievement level in a subject area.

**Secondary Grouping Research**. Slavin's (1990) best-evidence synthesis of research on ability-grouped classes at the secondary level included 29 controlled studies, 17 of which included middle school/junior high student samples (grades 5-8) and 17 of which included senior high student samples (9-12). In measuring achievement, 12 of the studies assessed achievement across all subjects and 17 studies reported achievement effects for 1-4 specific subjects. The reported median Effect Size across the 20 comparative and 9 case studies was zero. Slavin could find no discernible patterns among the findings that suggested advantages or disadvantages of grouping by subject, length of time, number of classes for which grouping took place, geographic setting, or age level. It is important to note that none of the studies included in this synthesis were conducted after the early 1970s when "tracking" was no longer considered a legally viable practice.

In this synthesis Slavin also reported Effect Sizes differentially by achievement/ability level. Twenty-one of the 29 studies had presented separate data by ability level, 15 of which were quantifiable. The median Effect Size for high achievers was +.01, for average achievers -.08, and for low achievers, the median Effect Size was -.02.

Slavin also located a few secondary studies which dealt with alternative grouping arrangements, finding that there were no differences in achievement when students are within-class ability grouped or cross-grade grouped at the middle/junior high/senior high school levels. No studies of regrouping for specific instruction at the secondary level were included in this synthesis.

Also studied were the ethnographic and correlational studies since the early 1970s, comparing the achievement of high track vs. low track students. In general, these studies have suggested that high achievers learn considerably more per year than do low achievers

in low tracks. Slavin argued that the inherent initial differences in ability, content background/course taking, motivation, and behavior cannot be adequately controlled. Two perceived limitations of this synthesis as noted by Slavin included:

> ...[A]lmost all studies reviewed here used standardized tests of unknown relationship to what was actually taught. It may be, for example that positive effects of ability grouping for high achievers could be missed by standardized tests because what these students are getting in enrichment or higher-order skills is not assessed on the standardized measures, or that negative effects for low achievers are missed because teachers of low-track classes are hammering away at the minimum skills that are assessed on the standardized tests but ignoring other content...[Another] limitation is the age of most of the studies reviewed. It is possible that schools, students, or ability grouping have changed enough since the 1960s and 1970s to make conclusions from these and older studies tenuous. (p. 493)

**Elementary Grouping Research**. For self-contained homogeneous classes based on achievement, Slavin (1987) located 17 studies, finding zero Effect Size, indicating that assignment of elementary students to ability grouped classrooms does not enhance achievement. There were no indications that high achievers were more likely to benefit from this practice or that low achievers were more likely to suffer as a result of full-time ability grouping.

Slavin's analysis of the seven studies on regrouping for specific subjects (the practice whereby students remain in their heterogeneous classes most of the day and are regrouped by achievement/performance level within grade levels for reading and/or math) found a general Effect Size for reading at zero, although Venezky and Winfield (1979) previously reported that "successful" schools tended to emphasize homogeneous grouping for reading, and Stallings (1978) reported that homogeneously grouped remedial reading programs in secondary schools resulted in significantly higher reading achievement gains. One well-designed study (Provus, 1960), described in Slavin's analysis, which dealt with regrouping for mathematics, found significant Effect Sizes for differing performance levels (high achieving = +.79, average achieving = +.22, low achieving = +.15) but only when students were given materials appropriate to their established level of performance. One study which measured the effects of regrouping for both mathematics and reading resulted in a mean Effect Size of +.43 at the end of three years; two years later, after the control group had also begun regrouping, the Effect Size of the original experimental group was +1.20, a considerable cumulative advantage of such a strategy (Morris, 1969). Thus, there appears to be some evidence that regrouping can be instructionally effective at the elementary level if the level and pace of instruction is differentiated according to the achievement level of the regrouped class and if students are not regrouped, according to Slavin, for more than 1-2 different subjects during the school day.

The Joplin Plan (Floyd, 1954) can be considered an extension of regrouping for reading, wherein regrouping takes place across grade levels. This nongraded grouping in subjects other than reading, it is more likely termed, "cross-grade grouping." Slavin located 14 controlled studies of this grouping strategy, 13 of which involved reading. The mean Effect Size for reading was +.45; 10 studies reported positive outcomes and 3 reported neutral effects. The one study on cross-grade grouping in mathematics resulted in

a similar Effect Size (+.46). The general pattern of effects tended to become larger in the upper elementary grades. In no case did one subgroup gain in achievement at the expense of another.

All eight studies of within-class ability grouping, the fourth grouping strategy examined in the Slavin synthesis, involved the use of teacher-designated math ability groups within the classroom. One study also measured the effects of within-class grouping in reading and spelling. The mean Effect Size for this strategy was +.32, but for five of the studies which had reported differential effects by ability, Slavin was able to calculate the mean Effect Sizes by ability levels as well. All subgroups appeared to gain: high achievers (ES=+.41), average achievers (ES=+.27), low achievers (ES=+.65). The only one of these studies that produced aberrant results was one in which the number of within class groups was 4, rather than 2-3 (ES = +.07). Slavin concluded that within-class grouping for mathematics results in significant academic gains when the number of groups is limited to 2-3.

The Kuliks (1990) have mentioned what appear to be several valid concerns with Slavin's conclusions from this within-class ability grouping synthesis:

> ... Slavin (1987, 1988) has speculated that grouping has maximum positive effects on student achievement when (1) it is done for only one or two subjects; (2) students remain in mixed-ability classes most of the day; (3) grouping greatly reduces heterogeneity in a specific skill; (4) group assignments are frequently reassessed; and (5) teachers vary the level and pace of instruction according to students' needs. We investigated each of these factors in this meta-analysis, and we found no direct evidence that any of them were significantly related to grouping effects. (p. 185)

**Research Synthesis by Gamoran and Berends**

In their synthesis of all survey and ethnographic research that has been conducted on tracking in secondary schools, Gamoran and Berends (1987) analyzed the conclusions of these two forms of research separately. From the 10 American data sets used in 16 survey studies, the most consistent effect of tracking appeared to be subsequent educational attainment: Students in academic tracks were more likely to plan to attend and to enroll in college. When prior achievement was controlled for, findings about the effects of tracking upon achievement were mixed. Among the four data sets that dealt with this particular question, two suggested that high track students had achievement advantages (Kerckhoff, 1986; Gamoran, 1987) and two suggested small, insignificant differences in achievement by track (Project Talent, ETS). Track differences were greatest in mathematics and science, which was accounted for by differential course taking, but similar mediating effects were not found for reading, vocabulary, writing or civics achievement. Gamoran and Berends concluded that the survey research remains ambiguous concerning the measurement of within-school stratification because it has not paid attention to the mechanisms through which the effects of tracking occur. Merely noting that there are x students per track in a school, who have taken x courses and have x test scores and have x college plans, does not help educators to understand what might be inherent instructional

process differences, classroom interaction differences, or student-teacher interaction differences which might lead to more or less achievement, self-esteem, or attitude toward school. As Hallinan (1990) noted:

> Careful systematic research is currently underway by several social scientists examining the interaction between the organizational practice of ability grouping and the instructional process as it affects student opportunities to learn and academic achievement. This research promises to be far more fruitful in addressing the complex issues related to the effectiveness and equity of ability grouping than previous studies that were limited in conceptualization, scope and methodology. (pp. 503-504)

Gamoran and Berends' synthesis of ethnographic research on tracking documented some focus on instructional effectiveness differences and equity issues. Several observational studies were cited that have noted that instruction is conceptually simplified and proceeds more slowly in lower tracks, and that slow pacing may be used as a means for maintaining order. The researchers were also able to produce some ethnographic evidence that the more experienced and more successful teachers are disproportionately assigned to the higher tracks, and that teachers in higher track classes have been observed to be more enthusiastic about their teaching, put more time and energy into preparation, vary their methods of presentation more and use more constructive criticism than teachers in lower track classes. Gamoran and Berends concluded that the ethnographic research was consistent in these observed characteristics, but, they noted, this research has failed to substantiate that there is a **significant** difference in instructional quality between tracks.

### Research Synthesis by Vaughan

Vaughan's (1990) meta-analysis on gifted pull-out programs located nine controlled studies reporting achievement outcomes (n=3, ES=+.65), critical thinking differences (n=3, ES=+.44), creative thinking assessments (n=2, ES=+.32), and self-concept effects (n=4, ES=+.11). These results tend to concur with the Kuliks' findings for within class programs for gifted students.

The very positive Effect Sizes reported in Vaughan's research synthesis illustrate one of the measurement issues in this research. When measures are selected to reflect what has been offered in the treatment condition (e.g., a test of academic achievement when the pullout program has focused on extensions of the regular curriculum or a test of critical thinking when the pullout program has taught critical thinking skills), Effect Sizes are significant and positive. It is possible that the small Effect Sizes reported in previous syntheses may be due to the lack of validity in instrument selection. What students are actually taught in their ability-grouped classes may not have been directly measured in previous research.

## Cooperative Learning Research

Three formal research syntheses have been conducted on academic and nonacademic effects of mixed-ability cooperative learning for academic instruction (Johnson, Johnson, & Maruyama, 1983; Johnson, Maruyama, Johnson, Nelson, & Skon,

1981; Slavin, 1990). Additionally, Slavin (1990) has provided a "box score" of the research studies on the nonacademic outcomes of cooperative learning.

### Research Synthesis by Johnson, Johnson, and Maruyama

Johnson, Johnson, and Maruyama (1983) analyzed the research on the cooperative learning effects of physical proximity and interaction on the social relationships of ethnically diverse students, handicapped students, and ethnically similar and nonhandicapped students. Ninety-eight studies, conducted between 1944-1984 yielded 251 reported outcomes. The researchers concluded that cooperation **without** intergroup competition promoted greater interpersonal attraction among all three groups of students than did interpersonal competition (i.e., each student competes against the rest of the class members), working independently, or cooperation **with** intergroup competition (i.e., one cooperative group competes against other cooperative groups in the classroom).

In their meta-analysis of the 31 studies that compared the relative effects of cooperative vs. individualistic treatments on majority and minority students, the mean Effect Sizes of cross-ethnic attitudes suggested that cooperative learning tends to produce substantially more positive cross-ethnic attitudes than do competitive practices (ES = +.54) or than individualistic practices (ES= +.68).

Twenty-six studies compared the effects of cooperative vs. competitive and cooperative vs. individualistic treatments on attitudes toward handicapped students. Effect Sizes of +.86 (vs. competitive) and +.96 (vs. individualistic) indicated that cooperative learning tends to produce significantly more positive attitudes toward handicapped students than do competitive or individualistic practices in the classroom.

The researchers located 48 studies which compared the effects of cooperative vs. competitive and cooperative vs. individualistic treatments in homogeneous subject populations (ethnic/handicap status) on the variable of interpersonal attraction. The Effect Sizes of +1.05 (vs. competitive) and +1.28 (vs. individualistic), were reported, indicating that cooperative learning tends to produce significantly higher interpersonal attraction (mutual liking and respect) among majority and nonhandicapped students than do competitive or individualistic instructional practices.

In analyzing the possible moderating variables that may influence interpersonal relationships, the researchers concluded that cooperation **without** competition promoted greater interpersonal attraction in elementary and college students than in secondary students, and cooperation **with** intergroup competition promotes greater interpersonal attraction among older students in general. Subject area differences were also found: Greater interpersonal attraction was produced for cooperative practices in mathematics, psychology, and physical education than for language arts, science, and social studies.

### Research Synthesis by Johnson, Maruyama, Johnson, Nelson, and Skon

In their meta-analysis (1981) of 122 studies comparing the relative academic effects of cooperation **without** competition, cooperation **with** intergroup competition, interpersonal

competition, and individualistic learning on student productivity and achievement, the researchers concluded that both forms of cooperative learning were superior in their academic effects to interpersonal competition or independent learning. In their analysis across the body of studies, the researchers reported a zero Effect Size for academic effects when the two forms of cooperative learning were compared, an Effect Size of +.78 when cooperative practices were compared to individualistic practices, and an Effect Size, also of +.78, when cooperative learning and competitive practices were compared.

These authors also attempted to analyze the moderating influences of other variables upon academic achievement, small negative relationships were noted between grade level and achievement in cooperative vs. competitive ($r = -.20$) and vs. individualistic practices ($r = -.07$), suggesting that somewhat higher achievement will be found in younger grades for cooperative practices. There were no differences among practices for specific subject area achievement, but very small differences favoring competitive and individualistic practices for low level tasks (such as rote decoding or correcting) were found. No differences in practice appeared to affect other task types (such as concept attainment, problem solving, categorization, memory, motor skill development, predictions, etc.). Length of treatment was found to affect reported outcomes, favoring cooperative learning when the shortest time spans were studied.

**Research Synthesis by Robert Slavin**

In a best-evidence synthesis of the research on cooperative learning conducted in 1990, Slavin set inclusion criteria that appear to have eliminated a large number of the studies conducted on these practices. His criteria were: (1) experimental and control groups being compared had to be studying the same material; (2) initial equivalence of the comparison groups had to be established; (3) the treatment in cooperative learning had to be at least 20 hours (4 weeks) long; and (4) achievement measures used in the studies had to assess objectives taught to both the experimental and control groups. These inclusion criteria appear to be important ones in consideration of research evidence.

Using these criteria, however, only 68 studies qualified for synthesis. Across this body of studies, representing nine forms of cooperative learning, the median Effect Size for achievement was +.21. Slavin's four cooperative methods had an overall Effect Size for achievement of +.30, with Teams-Games-Tournaments (TGT) being the form of cooperative learning with the highest effect (+.38), followed by Student Team Achievement Divisions (STAD) at +.27. No other forms of cooperative learning showed more than even small effects for achievement: Johnson's "Learning Together" (0), Jigsaw (+.04), Group Investigation (+.12), other forms (+.06). None of the studies synthesized reported effects of cooperative learning on differing levels of ability.

Slavin used a vote counting or "box score" method for synthesizing the research on nonacademic effects of cooperative learning and concluded that the practice: (a) promotes cross-racial friendships (20 studies, 19 positive); (b) encourages acceptance of mainstreamed academically handicapped students (24 studies, 24 positive); (c) encourages on-task behavior in emotionally disturbed students in self-contained classrooms (2 studies); (d) enhances self-esteem (15 studies, 11 positive); (e) improves proacademic peer norms (11 studies, 7 positive); (f) influences internal locus of control (8 studies); (g) increases time on-task and behavior (10 studies, 8 positive); (h) improves liking of class or school

(26 studies, 14 positive, 11 no difference, 1 improves for some ethnic minorities but not others); (i) increases liking of classmates and/or feeling liked by classmates (16 studies, 11 positive, 5 no difference); and (j) improves cooperation, altruism, and perspective-taking (10 studies, 9 positive). None of the studies reported separate effects for high ability or gifted learners. It should be noted that many of the studies referenced for these nonacademic outcomes were not included as "best evidence" in his synthesis of academic outcomes. In summary, Slavin concluded:

> ... [C]ooperative learning has been shown in a wide variety of studies to positively influence a host of important noncognitive variables. Although not every study has found positive effects on every noncognitive outcome, the overall effects of cooperative learning on student self-esteem, peer support for achievement, internal locus of control, time on-task, liking of class and of classmates, cooperativeness, and other variables are positive and robust. (p. 53)

## Research On Acceleration

### Research Synthesis by James Kulik and Chen-Lin Kulik

In 1984, Kulik and Kulik conducted a meta-analysis of research since 1920 on acceleration. They attempted to answer the following four questions about acceleration: (1) What are the effects of acceleration?; (2) Do the effects vary as a function of the methodological features of study settings?; (3) Do different approaches to acceleration have different effects on different students?; and (4) Do different approaches to acceleration have different effects for different types of instructional outcomes? Three criteria were required for inclusion in the analysis: (1) a quantitative report of the results; (2) a comparison of an accelerated group of students with a nonaccelerated control group; and (3) a match in aptitude between the accelerated and nonaccelerated groups.

The Kuliks located 21 reports of research, containing 26 different studies; thirteen used a same-age control and 13 used an older-aged control group. Each set of studies was analyzed separately. In all 13 studies with the same age controls, there was higher student achievement for the accelerated group, with 9 of these studies yielding statistically significant differences. The mean Effect Size was +.88. When accelerants were compared to older students, accelerants scored significantly higher in two studies and higher, although not significantly on three others. In the remaining eight studies achievement for the control students was greater; in two cases, the differences were significant. The mean Effect Size across the 13 studies was +.05, and the Kuliks concluded that accelerated students do not differ in achievement from their older aged controls.

Other outcome measures were also subjected to meta-analysis with no substantial advantage or disadvantage for acceleration: (1) attitude toward school (ES =+.07 across 4 studies); (2) attitude toward subject (ES =+.02 on 4 studies); (3) effects on vocational plans (ES =+.17, 6 studies); (4) participation in school activities (ES = -.13, 3 studies); (5) popularity (ES =+.03, 5 studies); (6) adjustment (ES =-.03, 3 studies); and (7) teacher-rated character judgments (ES = -.25, 3 studies).

The primary value of the Kuliks' analysis may be the results it provides for the general practice of acceleration. Three types of acceleration (all allowed the student to

progress more rapidly through the general curriculum, e.g., grade skipping) were clustered into "curriculum compression" (n=18) or "other" (n=8). Thus, the effects of grade skipping or of subject acceleration were not separately calculated. Some concern might be raised about the Kuliks' conclusions that study features were not related to outcomes: The test of homogeneity used may not have been sensitive enough to determine that different instructional practices of acceleration had been combined. The strength of this research synthesis was its clarity in procedural description and study results. In general, the Kuliks established that gifted students who accelerated into higher grades performed as well as the talented, older students already in those grades. Students who were accelerated showed almost a year's advancement over gifted, same age nonaccelerates.

**Research Synthesis by Rogers**

In 1991, Rogers conducted a best-evidence synthesis to objectively, systematically and quantitatively describe the content of the research on 12 accelerative programming options for gifted students. The 12 forms analyzed included:

1. **Early Entrance to School** - the practice of allowing selected gifted children, showing readiness to perform schoolwork, to enter kindergarten or first grade one to two years earlier than the usual beginning age;

2. **Grade Skipping** - the double promotion of a learner such that he/she bypasses one or more grade levels;

3. **Nongraded Classrooms** - the practice of placing learners in a classroom undifferentiated by grade levels, allowing students to work through the curricular materials at a pace appropriate to individual ability and motivational level;

4. **Curriculum Compression/Compacting** - the practice of tailoring the regular curriculum of any or all subjects to the specific gaps, deficiencies and strengths of an individual student, allowing the learner to "test out" or bypass previously learned skills and/or content and focusing only on mastery of deficient areas, thus moving more rapidly through the curriculum offered in the educational setting;

5. **Grade Telescoping** - a student's progress through junior high or high school is reorganized to shorten the time of progression by one year; also known as "rapid progression";

6. **Concurrent Enrollment** - the practice of allowing a student to attend classes in more than one building level during the same school year, e.g., a junior high student attends high school for part of the school day and the junior high classes for the remainder;

7. **Subject Acceleration** - the practice of allowing an individual student to bypass the usual progression of skills and content mastery in one subject where great advancement or proficiency has been observed while progressing at the regular pace through the remaining subject areas;

8. **Advanced Placement** - the provision of courses with advanced or accelerated content, usually at the secondary school level, which affords the student an opportunity to take a national standardized test in order to be given credit for completion of college-level coursework;

9. **Mentorships** - the placement of a student with a subject matter expert or professional for the purpose of advancing a specific interest or proficiency, which cannot be provided within the regular educational setting;

10. **Credit by Examination** - the provision of testing programs whereby the student, after successful completion of a test, will be offered a specified number of college credits upon entrance to college;

11. **Early Admission to College** - the practice of permitting a student to enter college as a full-time student without completion of a high school diploma; and,

12. **Combined Accelerative Options** - the provision of two or more forms of accelerative options during the student's K-12 progression.

Of these 12 options, 6 have been implemented to some extent as small group strategies for acceleration: **Nongraded Classroom, Curriculum Compression/Compacting, Grade Telescoping, Subject Acceleration, Advanced Placement,** and **Early Admission to College.** It is these forms that will be reported in this paper. The reported outcomes for each form of acceleration were categorized as **Academic** [including subject achievement, grade equivalence, grade point average and attitude toward learning, representing 63% of the outcomes reported], **Socialization** [including social development, peer interaction, leadership activities, extracurricular participation, and social adjustment, representing 22% of the reported outcomes], and **Psychological Adjustment** [including self-confidence, confidence, emotional development, emotional health, creativity, risk-taking, and independence, representing 15% of the outcomes].

For the 11 studies on **Nongraded Classroom**, ES (**Academic**) = +.38, ES (**Socialization**) = +.02, and ES (**Psychological Adjustment**) = +.11, suggesting a significant academic effect of nongraded classrooms for gifted students, but only trivial, positive effects of this practice on their socialization and psychological adjustment. Analysis of the eight **Curriculum Compression/Compacting** studies produced a substantial Effect Size for academic outcomes only: ES = +.45. None of the studies of this programming option had addressed either social or psychological issues. The **Grade Telescoping** studies (n=23) reported ES (**Academic**) = +.56, ES (**Socialization**) = +.22, and ES (**Psychological Adjustment**) = -.06, suggesting that academic achievement, when students are allowed to complete three years' junior high curriculum in two years or four years' high school curriculum in three years, is substantial. A small improvement in socialization may also occur with this practice, and there is a trivial, negative effect on self-concept.

Analysis of studies of **Subject Acceleration** (n=24 studies) resulted in reported Effect Sizes for ES (**Academic**) = +.49 and ES (**Psychological Adjustment**) = -.16. No socialization outcomes were reported across this research body. The studies suggest that there is a substantial academic gain when students are allowed to move ahead rapidly in a specific subject area, but this may be accompanied by a small, negative effect on self-concept. The 22 studies of **Advanced Placement** resulted in ES (**Academic**) = +.29, ES (**Socialization**) = +.24, and ES (**Psychological Adjustment**) = +.07, suggesting that there is a moderate academic and socialization gain but only a trivial improvement in self-concept. This set of results was somewhat surprising, considering the strong evidence of significant academic gain for ability grouped classes, of which Advanced Placement might be considered a variation of practice. It is possible that the general measures used did not reflect the actual learning that took place in Advanced Placement classes, thereby leading to only a moderate difference in academic achievement and socialization.

The 29 studies of **Early Admission to College** were included in this synthesis also because almost every study reported on large groups of students who participated in this option of allowing students to skip their last year of high school to enter college early. A similar pattern to other forms of acceleration was reported: ES (**Academic**) = +.44, ES (**Socialization**) = -.06, and ES (**Psychological Adjustment**) = +.16, suggesting that the academic gains of this practice are considerable, but the slightly negative socialization and small positive gain in self-concept are insignificant.

The researcher concluded that for the academic outcomes of most forms of acceleration-based grouping, the picture was fairly clear, but for socialization and psychological outcomes, much still needs to be learned. Rogers (1991) suggested that there appears to be a paradox in these findings: Acceleration is often rejected by practitioners on socialization or psychological grounds, when in fact such outcomes have been scantily researched. It would appear that this synthesis laid to rest two major misconceptions about acceleration. The first misconception has been that "acceleration is acceleration," that is, all forms of acceleration are basically the same. As Rogers' study showed, each of the accelerative options had a very different pattern of outcomes for gifted learners. Hence, individual decisions about accelerating must continue to be the norm, although more attention may be placed on matching the child to certain forms of acceleration, depending upon his/her learning, social, and psychological characteristics and needs. The second misconception has been that acceleration may have negative consequences for gifted learners. In fact, the synthesis suggested that there were minimal social and emotional effects for the majority of accelerative options.

## Summary

Just about 30 years ago, the issues surrounding ability grouping of the gifted underwent a debate similar to the one experienced in the late 1980s. In 1962 A. Harry Passow wrote a classic article for *Educational Forum*, entitled "The Maze of the Research on Ability Grouping." The maze Passow described has not been greatly transformed nor has it disappeared since that time, but has, instead, become even more complex. Passow listed eight difficulties which educators were confronted with in their attempts to generalize from the research on grouping:

1. Studies vary extensively in their scope and purpose. Some describe immediate rather than long-term effects, some describe effects on an individual learner while others look at general effects upon students in a district or state, most focused on math or reading outcomes alone, and very few assessed grouping effects on personal growth or social development.

2. There is great variety in the sample sizes and number of comparative groups involved from study to study. Depending upon the study design, samples have ranged from 6 to over 2,000.

3. Duration of the grouping treatment varies considerably. The studies have ranged from immediate assessment of a one-time treatment to retrospective studies of effects of the treatment after students have left the K-12 school system.

4. Variation exists in study design and in sample selection. Rarely have studies been conducted in which random assignment to treatment and control was possible, nor have the criteria for designation as "gifted" always been clearly defined and operationalized; in cases where the definitions were clear, the usual criterion has been the single score produced on an intelligence test, highly debatable as the best means for identifying giftedness.

5. Inadequate attention to what occurs when students are ability grouped for instruction. Few studies have documented actual differences in instructional process and in materials.

6. Variation in teacher deployment is evident within this body of studies. In some cases the same instructors were used for treatment and control situations but in most cases, no attempts were made to equate teachers based on their skills, knowledge, personal characteristics, and backgrounds.

7. Differences in how effects were measured contributes to the confusion on actual outcomes of grouping. Although this is less of a problem today with the advent of meta-analytical statistical procedures, it is difficult to determine which measure - a self-rating scale, an observational checklist, a teacher-made test, a performance-based assessment, a portfolio, or a standardized achievement test provides the clearest assessment of academic outcomes.

8. Few studies have evaluated the effects of grouping on teachers and school administrators. There is little documentation other than superficial survey research that grouping really has facilitated differentiated instruction.

While we have acquired a much larger base and can use its quantitative results to average across variations in sample size, study design, criterion measures, and treatment duration using the metric of Effect Size, much of what Passow described as the difficulties in generalizing from this research still holds true today. Even so, it is very clear that the academic effects of a variety of long and short-term grouping options for both the purposes of enrichment and acceleration are extremely beneficial for students who are academically

or intellectually gifted or talented. There is no body of evidence that "the research says" otherwise!

In this section, the general conclusions of the 13 major research synthesis on ability grouping, cooperative learning, and acceleration have been presented. Two figures follow which visually summarize the syntheses-supported outcomes. Appendix A lists the general conclusions and evaluates the weaknesses of the 13 research syntheses, and Appendix B matches research synthesis-supported conclusions to the concerns and assumptions discussed in Section Two.

## SECTION FOUR: GUIDELINES FOR SERVING THE NEEDS OF GIFTED AND TALENTED STUDENTS

The following guidelines are listed, based upon the valid conclusions of the 13 research syntheses evaluated in Section Three. Each guideline will be stated in simple language, followed by a short discussion of its research-supported rationale. In effect, the guidelines are listed in research-supported priority.

**GUIDELINE ONE: Students who are academically or intellectually gifted and talented should spend the majority of their school day with others of similar abilities and interests.**

Discussion: As the four research syntheses of James and Chen-Lin Kulik showed (1982, 1984, 1985, 1990), there is a marked academic achievement gain across all subject areas, as well as a moderate increase in attitude toward the subjects in which these students are grouped, when the grouping is full-time in differentiated programs (ES=+.33, +.27, respectively). What form this grouping may take is open: both general intellectual ability grouping (e.g., School Within a School, Gifted Magnet School, etc.) and grouping for special academic ability (Magnet Schools, etc.) appear to be academically beneficial. A concern must be raised that the development of such programs, if not established with open communication about the purposes of the program, may be construed as "elitist." Sensitivity to public concerns about equity and equal access to quality education is critical to the development of such program options. Also of concern is the difficulty such an option presents in very small schools or districts without a large enough number of students or resources to support a full-time homogeneously grouped program.

**GUIDELINE TWO: Schools that cannot support a full-time gifted program (whether demographically, economically, or philosophically), the cluster grouping of approximately one-third of a class load of students either intellectually gifted or gifted in a similar academic domain (or domains) will suffice. The classroom "cluster" teacher needs to be sufficiently trained, given preparation time, and willing to devote a proportionate amount of classroom time to the direct provision of learning experiences for the cluster group.**

Discussion: As the Kuliks were able to establish in their 1990 synthesis, the mean Effect Size for within-class grouping of the gifted is +.62, a sizeable academic achievement gain across all academic areas. This guideline was not listed first in importance due to the comparatively small number of research studies to support this practice (n=4). It is estimated that with a comparative sample of 25 studies, as was found with separate gifted programs, a substantial Effect Size comparable to the full-time special program Effect Size (+.33) would be more characteristic. Such an option cannot be only partially implemented: if the "cluster" teacher is not motivated or trained to work with gifted and talented students, or if the remainder of the class is comprised of extremely demanding or difficult students, or if the "cluster" curriculum is not appropriately differentiated, then the academic results will be lackluster.

**GUIDELINE THREE: In the absence of full-time gifted program enrollment, gifted and talented students might be offered specific group instruction across grade levels, according to their individual knowledge acquisition in school subjects, either in conjunction with cluster grouping or in its stead.**

Discussion: Slavin's synthesis, although it did not include gifted and talented research studies specifically, produced Effect Sizes large enough for the "Joplin Plan" in reading (ES=+.45, across 13 studies) to suggest that such outcomes might be expected of bright students in subjects beyond reading when placed in cross-graded situations. The Kuliks, however, reported a smaller Effect Size (ES=+.23, across 16 studies). Full-time "cross-grading" might also be considered Nongraded Classroom experiences, which for the gifted have been found to produce a mean academic Effect Size of +.38 (Rogers, 1991). Putting these three sets of findings together makes a good case for the strength of this form of educational provision for the gifted.

**GUIDELINE FOUR: Students who are gifted and talented should be given experiences involving a variety of appropriate acceleration-based options, which may be offered to gifted students as a group or on an individual basis.**

Discussion: As the Kuliks pointed out in their meta-analysis that combined several forms of acceleration, gifted accelerates showed an achievement gain of ES = +.88 over their gifted nonaccelerate controls and a trivial gain (ES = +.05) over their gifted older-aged controls. Rogers found substantial academic gains for 5 of the 6 forms of acceleration which may be implemented as small group strategies: Nongraded Classrooms (ES = +.28), Curriculum Compaction (ES = +.45), Grade Telescoping (ES = +.56), Subject Acceleration (ES = +.49), and Early Admission to College (ES = +.44). The sixth option, Advanced Placement, was close to a substantial academic gain at ES = +.29.

**GUIDELINE FIVE: Students who are gifted and talented should be given experiences which involve various forms of enrichment that extend the regular school curriculum, leading to the more complete development of concepts, principles, and generalizations. This enrichment could be provided within the classroom through numerous curriculum delivery models currently used in the field, or in the form of enrichment pullout programs.**

Discussion: Vaughan's meta-analysis of studies involving enrichment pullout programs showed substantial academic gains, ranging from +.32 to +.65 in the specific areas for which experiences were provided in the pullout program. The opportunities offered in such programs can be effectively delivered within the classroom, as well as through the variety of enrichment models that have been developed in the past two decades.

**GUIDELINE SIX: Mixed-ability Cooperative Learning should be used sparingly, perhaps only for social skills development programs.**

Discussion: Robinson's (1990) exhaustive search of the literature was unable to uncover any well-designed research to substantiate academic achievement gains for gifted

learners when placed in cooperative settings with students of mixed ability. Slavin's concern about the "Robin Hood Effect," the slight rise in achievement for low-ability learners must take precedence until a solid body of research has been established to: (1) counteract Slavin's concern; and (2) provide evidence that homogeneous cooperative groups produce more academic effect than heterogeneous cooperative groups or than homogeneous ability groups using a variety of learning modes (individualistic, small group competitive, etc.).

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**Appendices**

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusion/Exclusion Criteria | Number of Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| GROUPING FOR ENRICHMENT | | | | |
| Kulik & Kulik (1982) "Effects of Ability Grouping on Secondary School Students: A Meta-Analysis of Evaluation Findings" | 1. Quantitative results<br>2. Treatment/Control studies only<br>3. Initial equivalence of comparatives established<br>4. Subjects taught to all comparative groups | 52 | For Secondary Students:<br>1. General benefits of "tracking" small, positive<br>2. Achievement of high ability students significant when ability grouped<br>3. Grouped students, all ability levels, significantly more positive about subjects studied<br>4. No effect of "tracking" on self-concept or attitude toward school | 1. Combined between class and within class studies as one practice<br>2. Inflated means ES across all ability levels by integrating gifted studies with multi-track studies<br>3. NO treatment duration control (5-37 + weeks) |
| Gamoran & Berends (1987) "The Effects of Stratification in Secondary Schools: Synthesis of Survey and Ethnographic Research" | 1. Survey or ethnographic studies only<br>2. Quantitative or qualitative data acceptable | 25 survey (10 data sets ) +44 ethnographic | For Secondary Students:<br>1. Students in academic (high) tracks more likely to plan on and enroll in college<br>2. In survey research, course enrollment not tracking accounts for differences in achievement | 1. Method of study selection not described: not all possible studies may be included<br>2. Consideration of controlled studies in addition to survey and ethnographic studies would have clarified the issues better |

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusion/Exclusion Criteria | Number of Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| Gamoran & Berends (1987) "The Effects of Stratification in Secondary Schools: Synthesis of Survey and Ethnographic Research" (Continued) | | | 3. In survey research, tracking has little overall effect on achievement or attitudes: effects not adequately measured<br>4. In ethnographic research, documented differences in instructional quality but with no meaningful substantiation of significant differences | |

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusion/Exclusion Criteria | Number or Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| Slavin (1990) "Achievement Effects of Ability Grouping in Secondary Schools: A Best--Evidence Synthesis" | 1. Treatment/control studies only<br>2. Standardized achievement results only<br>3. Initial equivalence of comparatives established<br>4. Treatment at least 1 semester's duration<br>5. At least 3 treatment vs. 3 control teachers (classrooms)<br>6. No studies of special classes or low achievers: multi-track studies only | 29 | <u>For Secondary Students:</u><br>1. No differences in achievement between tracked and nontracked students<br>2. No differences in achievement when students cross-graded or not, or when within-class grouped or not | 1. Attributes no differences in achievement to effects of tracking, but attributes significantly effects of grouping of gifted and low achievers to context (teacher, materials, etc.)<br>2. Majority of studies are dated<br>3. Standardized tests may not have reflected what was actually taught |
| Kulik & Kulik (1984) "Effects of Ability Grouping on Elementary School Pupils: A Meta-Analysis" | 1. Quantitative results<br>2. Treatment control studies only<br>3. Initial equivalence of comparatives established<br>4. Subjects "taught" to all comparative groups | 31 | <u>For Elementary Students:</u><br>1. General benefits of "tracking" small, positive<br>2. Achievement of high ability students in gifted programs was significant; in multi-track programs high ability achievement small, positive<br>3. Grouped students, all ability levels, was small, negative | 1. Combined between class and within-class studies as one practice<br>2. No treatment duration control (16-108 weeks) |

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusion/Exclusion Criteria | Number of Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| Slavin (1987) "Ability Grouping and Student Achievement in Elementary Schools: A Best-Evidence Synthesis" | 1. Treatment/control studies only<br>2. Standardized achievement results only<br>3. Initial equivalence of comparatives established<br>4. Treatment at least 1 semester<br>5. 3 treatment vs. 3 control teachers (classrooms)<br>6. No studies of gifted or low achievers; multi-track studies only | 44 (14 "tracking" 7 "regrouping" 15 "Joplin" 8 "within-class") | <u>For Elementary Students:</u><br>1. No differences in achievement between tracked and nontracked students<br>2. Significant achievement effects for cross-grade grouping in reading<br>3. Significant achievement effects for within-class grouping for math<br>4. Inconclusive results on effects of regrouping for specific subjects | 1. Unequal attribution: Attributes no differences in achievement to effects of tracking but attributes significant effects of grouping of gifted and special ed. students to context in group (teacher, curriculum materials)<br>2. Majority of studies are dated<br>3. Standardized tests may not have reflected what was actually taught |

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusion/Exclusion Criteria | Number of Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| Kulik & Kulik (1985) "Effects of Inter-class Ability Grouping on Achievement and Self-Esteem" | 1. "Tracking" studies only<br>2. Quantitative results<br>3. Treatment/control studies only<br>4. Initial equivalence of comparatives established<br>5. Subjects "taught" to all comparative groups | 85 (40 elementary 45 secondary) | <u>For Elementary/ Secondary Students</u><br>1. General benefits of tracking small, positive in multi-track studies<br>2. General achievement effects in honors programs significant, substantial<br>3. Small, positive differences in achievement in remedial programs<br>4. Small, negative effects on self-esteem of higher and average ability and small, positive self-esteem effect for low ability in multi-track studies<br>5. No differences in self-esteem for honors programs<br>6. Small, positive effects on self-esteem in remedial programs | 1. No treatment duration control (5-108 Weeks)<br>2. No size of study control |

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusion/Exclusion Criteria | Number of Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| Kulik & Kulik (1990) "Ability Grouping and Gifted Students" | 1. Inter-Class studies only<br>2. Quantitative results<br>3. Treatment/control studies only<br>4. Initial equivalence of comparatives<br>5. Subjects "taught" to all comparative groups | 49 multi-track studies<br>15 within-class studies<br>25 gifted program studies<br>4 within-class gifted program studies<br>16 cross-graded studies | <u>For Elementary/ Secondary Students:</u><br>1. General benefits of ability grouping in multi-track studies was small, positive with high achievers having significantly higher achievement effect than other groups<br>2. Self-esteem effects in multi-track studies were small, negative, with low achievers having significant, <u>only</u> positive effect<br>3. Moderate, positive effect on attitude toward subject in multi-track studies<br>4. Small, positive effect on attitude toward school in multi-track studies<br>5. Moderate, positive effect on achievement in within-class multi-track studies | 1. No treatment duration control (9 weeks - 4 years)<br>2. No size of study weighting or control |

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusion/Exclusion Criteria | Number of Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| Kulik & Kulik (1990) "Ability Grouping and Gifted Students" (Continued) | | | <u>For Elementary/ Secondary Students:</u><br>6. Moderate, positive effect on achievement in cross-grade group multi-track studies<br>7. Large, positive achievement in gifted/honors studies<br>8. No difference in self-esteem in gifted/honors studies<br>9. No difference in attitude toward subject in gifted/honors studies<br>10. Large, positive effect on attitude toward school in gifted/honors studies<br>11. Within-class "cluster" grouping has very large, positive achievement effects in gifted studies | |

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusion/Exclusion Criteria | Number of Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| Vaughan (1990) "Meta-Analysis of Pull-out Programs in Gifted Education" | 1. Treatment/Control studies only<br>2. Gifted students in comparative groups; estimation of initial equivalence<br>3. Students spent majority of time in regular classroom | 9 | <u>For Elementary/ Secondary Students:</u><br>1. Large, positive achievement effects for gifted students in pull-out programs<br>2. Large, positive critical thinking effects for pull-out programs<br>3. Moderate, positive creativity effects for pull-out programs<br>4. Small, positive self-concept effects for pull-out programs | 1. Too few studies included<br>2. No explication for outcomes measured: Were they indicative of what occurred in program? |

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusion/Exclusion Criteria | Number of Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| GROUPING FOR COOPERATION | | | | |
| Johnson, Johnson, & Maruyama (1984) "Interdependence and Interpersonal Attraction among Heterogeneous and Homogeneous Individuals: A Theoretical Formulation and a Meta-Analysis of the Research" | 1. Treatment/control studies included at least 2 of 3 goal structures: cooperative, competitive, individualistic<br>2. No exclusion due to poor methodology or quality<br>3. North American studies only | 98 (31 ethnic, 26 handicapped, 48 homogeneous populations) | For Elementary/ Secondary Students:<br>1. Cooperation produced significantly large, positive gains in cross-ethnic attitudes<br>2. Cooperation produced significantly large, positive attitudes toward handicapped students<br>3. Cooperation produced significantly large, positive interpersonal attraction ratings among homogeneous students | 1. No control over treatment duration, sample size, methodology, or quality<br>2. Initial equivalence of comparative groups not always established<br>3. Equal access to content to be taught/assessed not always available to comparative groups<br>4. Many locally developed measures used with lack of validity, reliability<br>5. Majority of studies were Johnsons' own work<br>6. Individualistic groups not given same opportunity to interact but compared on reactions to interaction |

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusion/Exclusion Criteria | Number of Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| Johnson, Maruyama, Johnson, Nelson & Skon (1981) "Effects of Cooperative, Competitive, and Individualistic Goal Structures on Achievement: A Meta-Analysis" | 1. Treatment/control studies included at least 2 of 4 goal structures: cooperative, competitive, individualistic, cooperative with competition<br>2. No exclusion due to poor methodology or quality<br>3. North American studies only | 122 | <u>For Elementary/ Secondary Students:</u><br>1. Both forms of cooperation produce significantly large, positive effects on student productivity/achievement<br>2. Higher achievement effects found for younger grades in cooperative treatments | 1. No control for treatment duration, sample size, methodology, or quality<br>2. Majority of studies included Johnsons' own<br>3. Not all studies were of academic achievement |
| Slavin (1990) "Cooperative Learning and Student Achievement" | 1. Initial equivalence of comparative groups<br>2. Treatment duration of at least 20 hours or 4 weeks<br>3. Treatment/control groups had to study same material<br>4. Assessment had to cover objectives taught to all comparative groups | 68 | <u>For Elementary/ Secondary Students:</u><br>1. Student Team Learning methods of cooperation produce significant, moderate achievement effects when compared to other forms of cooperative learning<br>2. Individual accountability as element of cooperative learning when combined with group goals produced significantly larger academic effects | 1. Duration condition excluded majority of rival form of cooperative learning studies |

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusion/Exclusion Criteria | Number of Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| GROUPING FOR ACCELERATION | | | | |
| Kulik & Kulik (1984) "Effects of Accelerated Instruction on Students" | 1. Quantitative results<br>2. Treatment/control comparison with initial equivalence established | 26 | <u>For Elementary/ Secondary Students:</u><br>1. Accelerates produced significantly large positive achievement effects when compared to same age non-accelerates<br>2. No differences in achievement between accelerates and older age comparative groups<br>3. Trivial, positive effects on attitude toward school, toward subject, and popularity; small, positive effects on vocational plans<br>4. Trivial, negative effect on adjustment; small effect on participation; moderate negative effect on teacher-rated character judgment | 1. Average effects across several forms of acceleration<br>2. Did not include studies from several additional forms of acceleration |

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusions/Exclusion Criteria | Number of Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| Rogers (1991) "A Best-Evidence Synthesis of the Research on Types of Accelerative Programs for Gifted Students" | 1. Quantitative results<br>2. All quantitative study designs (rank ordered)<br>3. Had to be conducted with gifted samples | 314<br>Early Entrance to School =68<br>Grade Skipping =32<br>Nongraded Classrooms =20<br>Curriculum Compacting =9<br>Grade Telescoping =28<br>Concurrent Enrollment =36<br>Subject Acceleration =21<br>Advanced Placement =22<br>Mentorships =13<br>Credit by Examination =13 | <u>For Elementary/ Secondary Students:</u><br>1. All forms of acceleration except Advanced Placement, Concurrent Enrollment, Combined Accelerated Options produced large achievement effects. Advanced Placement, Concurrent Enrollment, Combined Accelerated Options reported moderate, positive achievement effects<br>2. Grade Skipping produced large, positive socialization effect; Grade Telescoping and Advanced Placement produced moderate, positive socialization; Early Entrance to School produced small positive effect; Nongraded Classroom and Concurrent Enrollment produced trivial positive and Early Admission to College and Combined Accelerative Options produced trivial negative socialization effect | 1. No focus on individual responses/effects of accelerative decisions<br>2. No studies represent several socialization or psychological categories for some forms of acceleration<br>3. No focus on college accelerative options: K-12 only |

**Appendix A** Meta-Evaluation of 13 Research Syntheses on Grouping Issues

| Research Synthesis | Inclusions/Exclusion Criteria | Number of Studies | Conclusions Drawn | Weaknesses in Synthesis |
|---|---|---|---|---|
| Rogers (1991) "A Best-Evidence Synthesis of the Research on Types of Accelerative Programs for Gifted Students" | | Early Admission to College =37 Combined Acceleration Options =15 | 3. Concurrent Enrollment and Mentorships produced large, positive psychological adjustment effects. Small positive effects for Early Entrance to School, Grade Skipping, Nongraded Classrooms, Early Admission to College, Combined Acceleration Options. Small negative effects for Grade Telescoping and Subject Acceleration | |

**Appendix B** Research-Supported Conclusions Concerning Grouping Issues

| Issue | Conclusion | Research Support | Representative Statements |
|---|---|---|---|
| Achievement benefits for gifted learners | Substantial achievement gain | Research Syntheses: Kulik & Kulik (1982, 1984, 1985, 1990), Vaughan (1990) | "The evidence is clear that high-aptitude and gifted students benefit academically from programs that provide separate instruction for them. Academic benefits are positive but small when grouping is done as part of a broader program for all students. Benefits are positive and moderate in size in programs that are specially designed for gifted students." (Kulik & Kulik, 1990, p. 191) |
| Achievement losses for average and slow learners | No difference in achievement tracked or not tracked | Research Syntheses: Slavin (1987, 1990), Kulik & Kulik (1982, 1984, 1985, 1990), Gamoran & Berends (1987) | "Ability grouping had only trivial effects on the achievement of average and below average students... the effect of grouping is near-zero on the achievement of average and below average students; it is not negative." (Kulik & Kulik, 1982, pp. 425-426) |
| Grouping inflates self-esteem of gifted, decreases self-esteem of average, low students | In multi-track grouping, self-esteem of gifted and average decreases slightly, increases slightly for low achiever. In honors and remedial programs, self-esteem increases slightly | Research Syntheses: Kulik & Kulik (1982, 1984, 1985, 1990), Vaughan (1990) | "... [S]chool programs providing special treatment for talented students usually produce good results. The talented students who are in these programs almost invariably gain academically from them, and they do not become smug or self-satisfied as a result of their participation. If anything, talented students may become slightly more modest about their abilities when they are taught in homogeneous groups ... This meta-analysis provided little support for the common belief that grouping programs have negative effects on slower learners. On the contrary, we found ... grouping ...often helped to improve the self-esteem of slow learners ..." (Kulik & Kulik, 1985, p. 4) |

**Appendix B** Research-Supported Conclusions Concerning Grouping Issues

| Issue | Conclusion | Research Support | Representative Statements |
|---|---|---|---|
| Cooperative learning benefits all learners' achievement | Substantial achievement gain for specific forms of cooperation<br>Inconsistent results for gifted | Research Syntheses: Johnson, Maruyama, Johnson, Nelson & Skon (1981)<br>Slavin (1990)<br>Study:<br>Robinson (1990) | "Overall, the effects of cooperative learning on achievement are clearly positive: 49 of the 68 comparisons were positive (72%); only 8 (12%) favored the control group. However, a look ... reveals that different learning methods vary widely in achievement effects. " (Slavin, 1990, p. 18)<br>"To summarize, the effects of cooperative learning on talented students are difficult to assess. First they are not the population of interest. Thus, few studies have explicitly identified them, described them adequately in the sample or analyzed outcomes by clearly defined achievement subgroups." (Robinson, 1990, p. 19) |
| Cooperative learning improves self-concept for all learners | Inconsistent effects reported | Studies only: (n=11) discussed in Slavin (1990), Johnson, Johnson, & Maruyama (1983) | "... [T]he evidence concerning cooperative learning and self-esteem is not completely consistent ... the effects of cooperative learning on student self-esteem are probably specific to the settings in which they were obtained: it is difficult to imagine a dramatic change in such a central part of students' psychological make up from an intervention of only a few weeks' duration." (Slavin, 1990, p. 44) |

**Appendix B** Research-Supported Conclusions Concerning Grouping Issues

| Issue | Conclusion | Research Support | Representative Statements |
|---|---|---|---|
| Acceleration produces social and psychological maladjustment for gifted learners | Most forms of acceleration produce small positive social and psychological gains. Some forms produce substantial socialization and psychological gains. | Research Syntheses: Rogers (1991), Kulik & Kulik (1984) | "... [Th]is study has shown that there are minimal social and emotional effects for the majority of accelerative options . ." (Rogers, 1991, p. 201) |
| Teachers expect benefits of enrichment for gifted, all learners | Inconclusive | | |
| Teachers' expectations differ for different ability groups; underestimate of low ability competence | Inconsistent reports | Research Syntheses: Gamoran & Berends (1987) Study: Oakes (1985, 1990) Finley (1984) | "According to Keddie (1971), teachers supposed that the everyday meanings of concepts were not always clear to students in low streams, and so they stressed basic, common-knowledge information in low-stream classes. High-stream students rarely asked questions about these meanings. There, teachers assumed the simple ideas were understood; consequently they presented students with broader, more complex concepts." (Gamoran & Berends, 1987, p. 423) |

**Appendix B** Research-Supported Conclusions Concerning Grouping Issues

| Issue | Conclusion | Research Support | Representative Statements |
|---|---|---|---|
| Low ability students lower own expectations for performance in low ability tracks | No difference in achievement<br>Slight gain in remedial programs | Research Syntheses:<br>Slavin (1987, 1990),<br>Kulik & Kulik (1985, 1990)<br>Gamoran & Berends (1987) discusses specific study only | "This meta-analysis provided little support for the common belief that grouping programs have negative effects on slower learners. On the contrary, we found that homogeneous grouping programs often helped to improve the self-esteem of slow learners and these programs may have also had small positive effects on their achievement."<br>(Kulik, 1985, p. 6) |
| Self-esteem of low and average ability students decreases in tracked classes | Self-esteem of low ability improves slightly. Self-esteem of average decreases slightly | Research Syntheses:<br>Kulik & Kulik (1985, 1990) | "... [O]verall self-esteem findings for honors, XYZ, and remedial programs ... shows ... that the 6 grouping programs designed especially for talented students had a trivial effect on their self-esteem. The 15 XYZ programs also had a very small overall effect, but there was a tendency for effects to be positive on the low ability groups in XYZ ... finally, the 3 studies of remedial programs provided additional evidence that instruction in homogeneous groups has positive effects on the self-esteem of slow learners."<br>(Kulik & Kulik, 1990 p. 191) |

**Appendix B** Research-Supported Conclusions Concerning Grouping Issues

| Issue | Conclusion | Research Support | Representative Statements |
|---|---|---|---|
| Teachers expect all children to learn same amount and proacademic peer norms improve when students are cooperatively grouped | Achievement gains for majority of learners. Inconclusive on achievement of gifted | Research Syntheses: Johnson, Maruyama, Johnson, Nelson & Skon (1981), Slavin (1990) The Johnsons claim 9 studies on gifted issue, but only 1 found. | "While both the motivational and the cognitive theories support the achievement benefits of cooperative learning, there is one important pitfall that must be avoided if [it] is to be instructionally effective. If not properly constructed, cooperative learning methods can allow for the "free-rider" effect, in which some group members do all or most of the work (and learning) while others go along for the ride." (Slavin, 1990, p. 16)<br><br>"... [The] overall effects stand as strong evidence for the superiority of cooperation in promoting achievement and productivity." (Johnson, Maruyama, Johnson, Nelson, & Skon, 1981, p. 58)<br><br>"The comparisons made in the literature are limited by the emphasis on basic skill outcomes, the selection of the traditional classroom rather than provisions more suited to talented students as the control, and the implementation of the individualistic condition comparison as lonely and punishing. These characteristics of the research base limit its applicability to talented students." (Robinson, 1990, p. 19) |

**Appendix B** Research-Supported Conclusions Concerning Grouping Issues

| Issue | Conclusion | Research Support | Representative Statements |
|---|---|---|---|
| Cooperative learning produces higher self-esteem for all group members, according to teacher expectations | Inconsistent research reports | Studies only (n=11) discussed in Slavin (1990) and Johnson, Johnson, & Maruyama (1983) | See previous quote on self-esteem (Slavin, 1990, p. 44) |
| Teachers expect accelerated children to have difficulty in higher grade academics | Gifted accelerates perform at same level as comparable older-age classmates | Research Syntheses: Kulik & Kulik (1984), Rogers (1991) | "Although reviews of the outcomes of acceleration have been consistently positive among researchers, perceptions of its efficacy have been markedly negative among practitioners and school administrators." (Rogers, 1991, p. 5) |
| Teachers expect decrease in self-esteem of accelerates | Gifted accelerates maintain and even improve self-esteem for most of acceleration forms | Research Syntheses: Kulik & Kulik (1984), Rogers (1991) | "There was no evidence of consistent positive or negative effects from acceleration on popularity, adjustment, or student participation in school activities." (Kulik & Kulik, 1990, p. 190)<br>See previous quote. (Rogers, 1991, p. 201) |

**Appendix B** Research-Supported Conclusions Concerning Grouping Issues

| Issue | Conclusion | Research Support | Representative Statements |
|---|---|---|---|
| Low-ability tracks contain disproportionate numbers of minority and disadvantaged students; high-ability tracks contain disproportionate numbers of white middle/upper class students. Stereotypes affect placement decisions | Membership counts are fairly accurate. Placement counselors may have "stereotypes" for performance that are racially connected, but placement decisions are made on performance data, not stereotypes. | Studies only:<br>Oakes (1985, 1990)<br>Dusek & Joseph (1983)<br>Rolinson & Medway (1985)<br>Haller (1985, 1986) | "Taken together, these results do not suggest that teachers are illegitimately influenced by pupils' race in making group decisions. It is certainly correct to say that black pupils are more often assigned to lower ability groups in elementary schools, just as they are over-represented in the general and vocational tracks of high schools. It is also correct to say that teachers' judgments about academically important criteria (such as reading ability) are related to race. Finally, it appears to be true that pedagogically important considerations (such as work habits, behavior, and conditions at home) have similar (though weaker) relationships with that variable. What seems to be incorrect, however, is the assertion that any of these relations are a result of children's race. Rather, this study suggests that the association of race with ... group assignments is primarily an artifact of its association with achievement."<br>(Haller, 1985, p. 480) |
| Tracking creates "in" group and "out" group hierarchy; social stigma is placed on slower learners | Inconclusive | Studies only:<br>Oakes (1985, 1990) is primary discussant of this. Hallinan & Sorenson (1985) suggest long term friendships are formed within groups | "In contrast to the esteem in which high-track classes are held, little value is accorded to low-track courses ... this evidence does not demonstrate that tracking creates differences in students' attitudes and expectations corresponding to differences in the symbolic meaning of of tracks."<br>(Gamoran & Berends, 1987, p. 430) |

**Appendix B** Research-Supported Conclusions Concerning Grouping Issues

| Issue | Conclusion | Research Support | Representative Statements |
|---|---|---|---|
| Recognition of individual differences is undemocratic; allows some to get ahead | Inconclusive | Studies only: Oakes (1985, 1990) is primary discussant. Discussed in Gamoran & Berends' synthesis (1987) cannot be attributed to tracking alone | "The view of schools as meritocratic institutions where, regardless of race or class, those students with the 'right stuff' are given a neutral environment where they can rise to the top is called into question by our findings. Everywhere we turn we see the likelihood of in-school barriers to upward mobility for capable poor and minority students. The measures of talent seem clearly to work against them, resulting in their disproportionate placement in groups identified by the type of knowledge they are exposed to and the quality of learning opportunities they are afforded." (Oakes, 1985, p. 134) |
| Cooperative learning promotes cross-ethnic attitudes | Substantial positive gains in cross-ethnic attitudes | Research Syntheses: Johnson, Johnson, & Maruyama (1983), Slavin (1990 | "... [C]ooperation tends to promote more positive attitudes between majority and minority students than does interpersonal competition ... or individualistic efforts." (Johnson, Johnson & Maruyama, 1983, pp. 16-17) |
| Cooperative learning promotes positive attitudes toward handicapped | Substantial positive gains in attitudes toward handicapped | Research Syntheses: Johnson, Johnson, & Maruyama (1983), Slavin (1990) | "The research on cooperative learning and relations between academically handicapped and normal-progress students generally shows that cooperative learning can overcome barriers to friendship and interaction between the students." (Slavin, 1990, p. 43) |

**Appendix B** Research-Supported Conclusions Concerning Grouping Issues

| Issue | Conclusion | Research Support | Representative Statements |
|---|---|---|---|
| Cooperative learning prepares gifted to lead, deal with all levels of of society | Inconclusive | Studies only:<br>Johnson & Johnson newsletter (1991) discusses this. Refers to 9 studies, but only 1 can be located.<br>Smith, Johnson & Johnson (1982) | "The message sent to bright students is: The group will do better only if everyone in it does better. You should contribute to the group, the most you can ... Perhaps we expect these bright achievers to cooperate academically with others, but we further demand they do so in socially acceptable, unobtrusive ways ... A related disadvantage is that the emphasis on talented students as tutors encourages educators to take a utilitarian view of them. In other words, we may come to value them only for their achievement and their usefulness to others ... While these are roles that fall within the general goals of citizenship and social responsibility espoused by public education, they are expectations we hold for all children. Talented children should be held no more or less accountable than others ..." (Robinson, 1990, p. 21) |
| Teachers interact differently with students in different tracks | No significant differences in instructional quality or learning time can be documented | Research Syntheses:<br>Gamoran & Berends (1987)<br>Discussed in studies:<br>Oakes (1985)<br>Finley (1984)<br>Sorenson & Hallinan (1986) | "Another possible explanation for weak and consistent tracking effects is that although instruction varies between tracks and ability levels, the instructional differences may actually be small when compared to the overall similarity of instruction at all levels." (Gamoran & Berends, 1987, p. 425) |

**Appendix B** Research-Supported Conclusions Concerning Grouping Issues

| Issue | Conclusion | Research Support | Representative Statements |
|---|---|---|---|
| Low ability instruction is generally un-challenging and passive; high ability instruction is challenging and active | No significant differences in instructional strategies or degree of active/passive reception can be documented | Research Syntheses: Gamoran & Berends (1987) Discussed in studies: Oakes (1985) Finley (1984) | "Summarizing the ethnographic findings, we found patterns of instructional differences favoring high-track classes ... the ethnographic literature provides little guidance for judging when between-track differences should be considered meaningful, and when they are trivial." (Gamoran & Berends, 1987, p. 426) |
| High ability tracks have access to "high" status" knowledge; low ability tracks receive vocational knowledge | Some indication that this occurs, but there is a question about whether this can be attributed to grouping per se | Research Syntheses: Gamoran & Berends (1987) Discussed in studies: Oakes (1985, 1990) | "Students in academic tracks are more likely to plan on attending college and more likely to enroll ..." (Gamoran & Berends, 1987, p. 418)<br><br>"The knowledge presented in high-track classes in math as in English was what we would call 'high status'; it was highly valued in the culture and necessary for access to higher education ... In contrast, low-track classes focused grade after grade on basic computational skills and arithmetic facts ... in essence, while the content was certainly useful, almost none of it was of the high-status type." (Oakes, 1985, p. 77) |

**Appendix B** Research-Supported Conclusions Concerning Grouping Issues

| Issue | Conclusion | Research Support | Representative Statements |
|---|---|---|---|
| "Better" teachers rewarded with high track classes | Inconclusive | Studies only:<br>Discussed in Oakes (1985) | "Ethnographers have provided more detailed information on instructional differentiation ... moreover, teachers reputed to be more skilled and successful are more often located in high-track classes ... still whether these instructional differences are large enough to cause persistent effects on student achievement remains an untested question." (Gamoran & Berends, 1987, p. 431) |
| Whole group instruction results in high instructional quality of all learners | No differences in achievement for whole group, mixed ability teaching; concern raised about "Robin Hood Effect" - decrease in high achiever's performance, slight increase in low achievers | Research Syntheses:<br>Gamoran & Berends (1987)<br>Slavin (1987) | "Because rapid coverage is likely to be of greatest benefit to high achievers while high mastery is of greatest benefit to low achievers, resolving the coverage-mastery dilemma as recommended by mastery learning theorists is likely to produce a 'Robin Hood' effect as a by product ... It is important to note that the coverage vs. mastery dilemma exists in all whole-class, group-paced instruction, and the 'Robin Hood' effect may be produced in traditional instruction." (Slavin, 1987, p. 206) |
| Grouping by ability/achievement is easier on teachers | Inconsistent | Research Syntheses:<br>Gamoran & Berends (1987)<br>Kulik & Kulik (1990)<br>Slavin (1987) | "Ability grouping is supposed to increase student achievement primarily by reducing the heterogeneity of the class or instructional group, making it possible for the teacher to provide instruction that is neither too easy nor too hard for most students." (Slavin, 1987, p. 296) |

**Appendix B** Research-Supported Conclusions Concerning Grouping Issues

| Issue | Conclusion | Research Support | Representative Statements |
|---|---|---|---|
| High track groups have healthy social relationships; low track groups are more disharmonious | Inconclusive | Research Syntheses: Gamoran & Berends (1987) Discussed in study: Oakes (1985) | "Children in low-track classes more often feel excluded from class activities and find their classmates unfriendly. Problems and arguing interrupt class more frequently. Students in low-ability classes seem apathetic. Being more likely to fail, they risk much more by trying hard and giving the appearance that they care." (Oakes, 1990, p. 4) |
| Accelerates are social misfits | Small positive gain in socialization are noted for most forms of acceleration | Research Synthesis: Rogers (1991) | See previous quote. (Rogers, 1991, p. 201) |
| More social cohesion, perceptions of peer support, and positive self-concept when cooperatively grouped | Inconclusive | Research Syntheses: Yes: Johnson, Johnson & Maruyama (1983) Not Sure: Slavin (1990) | "Cooperative learning experiences, compared with competitive and individualistic experiences have been found to result in stronger beliefs that one is personally liked, supported, and accepted by other students, that other students care about how much one learns, and that other students want to help one learn." (Johnson, Johnson, Maruyama, 1983, p. 33) See previous quote. (Slavin, 1990, p. 44) |